SECTION 3.0

AFFECTED ENVIRONMENT

SECTION 3.0
AFFECTED ENVIRONMENT

3.1 INTRODUCTION

As required by the Council on Environmental Quality's (CEQ) regulation, the Bureau of Indian Affairs (BIA) National Environmental Policy Act (NEPA) manual, 40 CFR Section 1502.15, and the 2011 Memorandum of Understanding (MOU) requirements for the Tribal Project Environmental Document (TPED), this section describes the existing environment of the area affected by the project Alternatives. Resource areas or issues that are described in this section include:

Section	Resource Area/Issue
3.2	Geology and Soils
3.3	Water Resources
3.4	Air Quality
3.5	Biological Resources
3.6	Cultural and Paleontological Resources
3.7	Socioeconomic Conditions
3.8	Transportation/Circulation
3.9	Land Use
3.10	Public Services
3.11	Noise
3.12	Hazardous Materials
3.13	Aesthetics

3.2 GEOLOGY AND SOILS

This section describes the existing environmental conditions for the proposed Twin Cities, Historic Rancheria, and Elk Grove Mall sites. The general and site-specific profiles of geology and soils contained herein provide the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.2**.

3.2.1 TWIN CITIES SITE – ALTERNATIVES A, B, AND C

Geological Setting

The Twin Cities site is situated in the Great Valley Geomorphic Province (Great Valley). This geomorphic province is a relatively flat alluvial plain, about 50 miles wide and 400 miles long, comprised of thick sequences of sedimentary deposits of Jurassic through Holocene age (Sacramento County, 2011). The Great Valley is bounded on the north by the Klamath and Cascade mountain ranges, on the east by the Sierra Nevada Mountains, and on the west by the California Coast Mountain Range. The Great Valley has been filled with sediment derived from both marine and continental sources. Material eroded from the ancestral Sierra Nevada Mountains, formed over 100 million years ago, was deposited in an ancient sea that once occupied the Sacramento Valley floor. As the sea receded, approximately 10 to 15 million years ago, tectonic activity created uplifting that was subsequently followed by glaciations and volcanism, all of which contributed additional layers of sediments on the valley floor (Sacramento County, 2011). The Great Valley is divided into four smaller geomorphic subunits: 1) The Delta, 2) River Floodplain, 3) Alluvial Plain, and 4) Low Foothills. The Twin Cities site is located in both the River Floodplain and Alluvial Plain subunits (City of Galt, 2005).

The Sacramento Valley surface elevations generally range from several feet below mean sea level (msl) to more than 1,000 feet above msl. The deepest layer of rock underlying the Sacramento Valley is Mesozoic intrusive igneous rock extending from the Sierra Nevada Mountains. Overlying the igneous rock are siltstone, claystone, and sandstone sedimentary rocks at least 10,000 feet thick. The upper 3,000 feet of soil consists of fluvial deposited sediments eroded from the mountains to the north and east. This layer is comprised of silty clay and sand deposits with layers of gravel (Sacramento County, 2011).

The Twin Cities site is characterized by generally flat topography, gently sloping north towards the site's northern border with Laguna Creek. Elevations on the Twin Cities site range from approximately 30 to 50 feet above msl. The mean slope is approximately 1.5 percent, with the southern rise generally distributed evenly across the site.

Soils

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) has surveyed and mapped soils for the Twin Cities site. Each survey maps soil units and provides a summary of major physical characteristics for each unit with management recommendations. In the Land

Capability Classification System used by the NRCS, soils are grouped according to soils capability class. A soils capability class indicates limitations on practical use for food, fiber, or forage production. Classes are designated by Roman Numerals I through VIII, with each class containing soils that are enough alike to require similar management. Additional coding by subclass is indicated by lower case letters, which designate the restrictions of soil groups within each class. General data on capability classes is presented in **Table 3.2-1**.

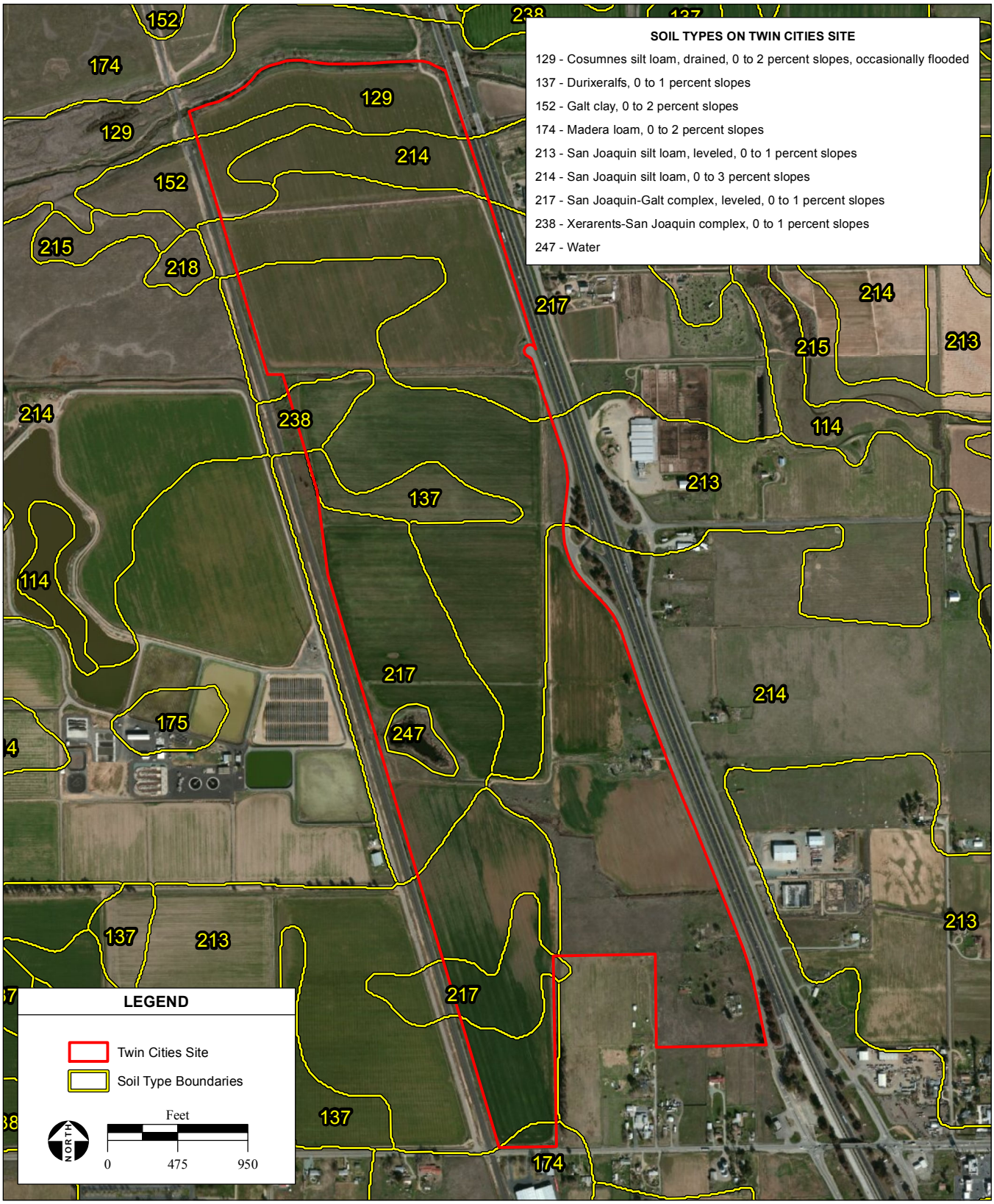
TABLE 3.2-1
SOIL CAPABILITY CLASSES

Capability Class	Definition
I	Soils have slight limitations that restrict their use.
II	Soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
III	Soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
IV	Soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
V	Soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife habitat.
VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife habitat.
VII	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife habitat.
VIII	Soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife habitat, water supply, or aesthetic purposes.
Capability Subclass	**Definition**
e	Soils have erosion problems. Main limitation is risk of erosion unless close-growing plant cover is maintained.
w	Soils have wetness problems. Water in or on the soil interferes with plant growth or cultivation.
s	Soils have root zone limitations. Soil is very shallow, droughty, or stony.
c	Soils have climatic limitations. Soil is limited by climate (in certain parts of the US).
Source: NRCS, 2014b	

The USDA NRCS soil survey map of the Twin Cities site is shown in **Figure 3.2-1**. A brief description of each soil unit mapped on the Twin Cities site and estimated site percentages are provided below.

129-Cosumnes Silt Loam

This very deep, and somewhat poorly drained, nearly level soil is typically located on low floodplains. It formed in alluvium derived from mixed rock sources. This soil, with slopes ranging from 0 to 2 percent, is located in the northern portion of the Twin Cities site surrounding the Laguna Creek riparian area, and comprises approximately 0.4 percent of the Twin Cities site.



SOURCE: UC-G Aerial Photograph, 2/2012; USDA NRCS Soil Survey
Data for Sacramento County, 10/1998-3/2012; AES, 2014

Figure 3.2-1
NRCS Soil Survey of Twin Cities Site

137-Durixeralfs

Durixeralfs consist of well-drained to moderately well-drained soils that usually exist in cut areas where most or the entire original surface layer has been removed. The surface layer is clay about 6 inches thick. The subsoil is clay about 14 inches thick and the next layer is silica cemented to a hardpan to a depth of 60 inches. This soil, with slopes ranging from zero to one percent, is located in the center of the Twin Cities site and comprises approximately 3 percent of the Twin Cities site.

174-Madera Loam

This moderately well drained, nearly level soil is generally found on low terraces. It is moderately deep to a hardpan and formed in alluvium from granite rock sources. Typically the surface layer is characterized by loam the first 15 inches. The lower substrate is clay ranging from 15 to 29 inches. This soil, with slopes ranging from 0 to 2 percent, is located on the southwestern corner of the Twin Cities site, adjacent to Twin Cities Road, and comprises approximately 0.3 percent of the Twin Cities site.

152-Galt Clay

This moderately well drained, nearly level soil is typically located on basin rims and in basins. It is moderately deep to hardpan and characterized by slopes ranging from 0 to 2 percent. It formed in alluvium derived from mixed rocks. Typically the surface layer clay about 13 inches thick with weakly cemented hardpan to a depth of 60 inches below. This soil makes up approximately 2.7 percent of the Twin Cities site and is located primarily in the northern portion near Laguna Creek.

213-San Joaquin Silt Loam

This moderately deep, well-drained soil type is common within the San Joaquin region. Typically, the surface layer is silt loam about 23 inches thick and the subsoil is a claypan consisting of clay loam about 5 inches thick. Subsequent deeper layers include a strongly cemented silica hardpan and silt loam. This soil, with slopes ranging from 0 to 1 percent, is found throughout the middle of the Twin Cities site, and comprises approximately 34 percent of the site.

214-San Joaquin Silt Loam

Soil characteristics are essentially identical to those described above but with greater slope ranges. The soil, with 0 to 3 percent slopes, is located throughout the middle and northern portions of the Twin Cities site and comprises approximately 26 percent of the site.

217-San Joaquin-Galt Complex

The Galt soils of this complex have characteristics similar to accompanying San Joaquin soil. The surface silt layer is thinner (about 15 inches), and the clay layer is thicker (about 5 inches of grayish-brown and brown clay). The Galt soil also includes silica hardpan. This complex is located throughout the middle of the Twin Cities site and comprises approximately 31 percent of the site.

238-Xerarent-San Joaquin Complex

This moderately well drained, nearly level soil is typically found on low terraces. It is moderately deep to a hardpan. Typical surface layers are 13 inches of fine sandy loam with loam and clay loam beneath. It formed in alluvium derived from granite rock sources. This soil is found in a small portion of the western side of the Twin Cities site, adjacent to the railroad, and comprises approximately 2 percent of the site.

Soil Properties

As shown on **Figure 3.2-1**, the Twin Cities site is comprised primarily of San Joaquin series soils. These soils generally have poor hydrologic soil grouping, primarily Soil Groups C and D, with mostly fine-grained clays with extremely slow infiltration and high runoff potential. Group Soil C is characterized by low infiltration rates and sandy clay loam. Group Soil D, however, has very low infiltration rates and is dominated by clay loam, silty clay loam, sandy clay, silty clay, or clay. Soils on the Twin Cities site are not prone to expansion or concrete corrosivity (NRCS, 2014). **Table 3.2-2** outlines the Twin Cities site soil characteristics which pertain to stormwater runoff and the potential for erosion.

Seismicity

Seismic Considerations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Fault Zoning Act) is a California law passed in direct response to the 1971 San Fernando earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. The Fault Zoning Act requires the State Geologist to delineate "Earthquake Fault Zones" along faults that are "sufficiently active" and "well defined." A sufficiently active fault is defined as one that has evidence of Holocene surface displacement. A fault is considered well defined if its trace is clearly detectable as a physical feature at or just below the ground surface. Both of these features must be present for a fault to be zoned under the Fault Zoning Act listed at the California Geological Survey's (CGS) website (CGS, 2012).

Seismic Intensity: The Modified Mercalli Intensity Scale

The Modified Mercalli Intensity (MMI) scale (**Table 3.2-3**) is a common measure of earthquake effects due to ground shaking intensity. The MMI values for intensity range from I (earthquake not felt) to XII (damage nearly total), with damage levels representing the estimated overall level of damage that will occur for various MMI intensity levels.

Magnitude

The Richter magnitude scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs.

TABLE 3.2-2
TWIN CITIES SITE SOIL PROPERTIES

Number	Soil	Percent of Site	Hydrologic Soil Group	Drainage Class	Saturated Hydraulic Conductivity Ksat (in/hr)	Erosion Susceptibility	Capability Class (irrigated – non-irrigated)
129	**Cosumnes Silt Loam**, drained, 0-2 percent slope, occasionally flooded	0.4	C	Somewhat poorly drained	Moderately low to moderately high (0.06 to 0.20)	Moderate to severe	IIw-IIIw
137	**Durixeralfs** 0-1 percent slope	3.0	D	Well drained	Very low (0.00 to 0.00)	Moderate to severe	IVs-IVs
152	**Galt Clay** 0-2 percent slopes	2.7	D	Moderately well drained	Very low (0.00 to 0.00)	Severe	IIIs-IIIs
174	**Madera loam** 0 to 2 percent slopes	0.3	D	Moderately well drained	Very low (0.00 to 0.00)	Moderate to severe	IVs-IVs
213	**San Joaquin Silt Loam**, leveled 0-1 percent slopes	33.9	C	Moderately well drained	Very low (0.00 to 0.00)	Moderate to severe	IIIs-IIIs
214	**San Joaquin Silt Loam** 0-3 percent slope	25.7	C	Moderately well drained	Very low (0.00 to 0.00)	Moderate to severe	IIIs-IIIs
217	**San Joaquin Galt complex**, leveled, 0-1 percent slope	30.9	D	Moderately well drained	Very low (0.00 to 0.00)	Moderate to severe	IIIs-IIIs
238	**Xerarents** 0-1 percent slopes	2.0	NA	Well drained	Very low (0.00 to 0.00)	Moderate to severe	IIIs-IIIs

Source: NRCS, 2014

Adjustments are included for the variation in the distance between the various seismographs and the epicenter of the earthquakes. On a Richter scale, the magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs, with adjustments made for the distance between the seismograph and the epicenter of the earthquake. Magnitude is expressed in whole numbers and decimal fractions. A magnitude 5.3 would be a moderate earthquake, and a strong earthquake could be a magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude, which corresponds to the release of about 31 times more energy (United States Geological Survey (USGS), 2014).

TABLE 3.2-3
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Acceleration
I.	Not felt except by a very few persons under especially favorable circumstances.	< 0.0015 g
II.	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.	< 0.0015 g
III.	Felt quite noticeably indoors, especially on upper floors of buildings, but many persons do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.	< 0.0015 g
IV.	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.	0.015 g-0.02 g
V.	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.	0.03 g-0.04 g
VI.	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	0.06 g-0.07 g
VII.	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motorcars.	0.10 g-0.15 g
VIII.	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motorcars disturbed.	0.25 g-0.30 g
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.50 g-0.55 g
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 0.60 g
XI.	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 0.60 g
XII.	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 0.60 g

Notes: g is gravity = 980 centimeters per second squared
Source: Bolt, 1988

Earthquakes with magnitude of about 2.0 or less are usually called microearthquakes. They are typically recorded only on local seismographs and usually not felt by people. Events with magnitudes of about 4.5 or greater are strong enough to be recorded by sensitive seismographs all over the world. Events with magnitudes of 8.0 or higher, such as the 1964 Good Friday earthquake in Alaska, are considered great earthquakes. The Richter scale is not used to express damage (USGS, 2014).

Seismic Conditions

The Sacramento Valley, like most of California, is a seismically active region. No known active faults or Alquist-Priolo earthquake hazard zones occur in Sacramento County or San Joaquin County (with the

exception of the Midway fault zone located in the southwest corner of San Joaquin County). However, several inactive subsurface faults are identified in the Sacramento-San Joaquin Delta, which is located southwest of the Twin Cities site and partially encompasses the southwestern area of the Sacramento County (USGS, 2010). **Figure 3.2-2** depicts the fault nearest the Twin Cities site, which is an unnamed quaternary fault which has been active in the last 1.6 million years. This fault is associated with the Midland Fault Zone (Sacramento County, 2011).

Liquefaction

Soil liquefaction can occur in seismic conditions. Liquefaction is the temporary transformation of saturated, non-cohesive material from a relatively stable, solid condition to a liquefied state as a result of increased soil pore water pressure. Soil pore water pressure is the water pressure between soil particles. Liquefaction can occur if three factors are present: seismic activity, loose sand or silt, and shallow groundwater.

The County General Plan identified two areas that have been suggested as posing potential liquefaction problems: the downtown area of Sacramento and the Sacramento- San Joaquin Delta (Sacramento County, 2011). The known liquefaction areas are not located in the vicinity of the Twin Cities site. Additionally, the soils identified in the area do not pose an increased risk for liquefaction.

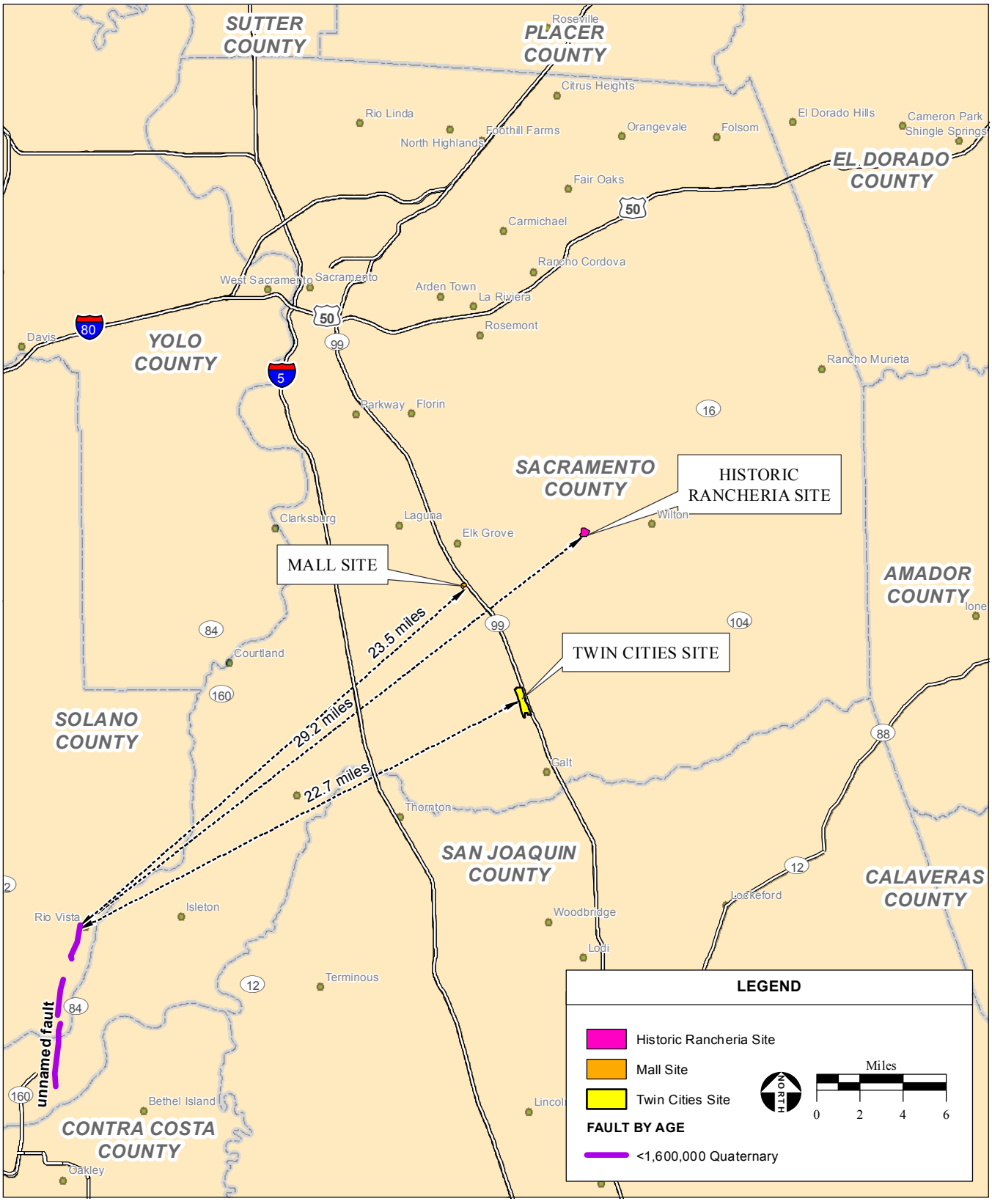
Lateral Spreading

Lateral spreading can occur during a seismic event in the form of horizontal ground displacement and is typical where the ground surface is relatively flat and comprised of alluvium or depositional sediment. This movement in soils is generally due to failure along a weak sub-layer that is formed within an underlying liquefied layer. Cracks develop within the weakened material, while blocks of soil move laterally toward the free face.

Due to the flat topography of the Twin Cities site and because there is a minimal risk of liquefaction in the project area, it is also unlikely that lateral spreading would occur.

Mineral Resources

The Surface Mining and Reclamation Act (SMARA) of 1975 requires all jurisdictions to incorporate mapped mineral resources designations approved by the California Mining and Geology Board within their general plans. SMARA was enacted to limit new development in areas with significant mineral deposits. The California Department of Conservation's Office of Mine Reclamation and the California Mining and Geology Board are jointly charged with ensuring proper administration of the act's requirements. The California Mining and Geology Board circulates regulations to clarify and interpret the act's provisions and also serves as a policy and appeals board.



SOURCE: USGS Quaternary Fault and Fold database, 2013; AES, 2013

Figure 3.2-2
Regional Faults

No identified mineral resources (i.e., gravel and/or sand) or notable geothermal resource areas exist within the Twin Cities site boundaries (California Department of Natural Resources (CDNR), 2011).

3.2.2 HISTORIC RANCHERIA SITE – ALTERNATIVES D AND E

Geological Setting

The 75-acre Historic Rancheria site is located approximately 8.7 miles northeast of the Twin Cities site and also is situated in Sacramento County within the Sacramento Valley. The Historic Rancheria site lies within the Great Valley and surficial deposits on the Historic Rancheria site are similar to those found on the Twin Cities site. A description of the regional geological setting is provided in **Section 3.2.1**.

Site Topography

The Historic Rancheria site lies on moderately level terrain in the flat alluvial plain of the Cosumnes River. The Historic Rancheria site has gently rolling topography with a cross slope of approximately one percent. There is a high point at Green Road that coincides with the location of an existing house on the Historic Rancheria site. The site elevation ranges from approximately 70 to 85 feet above msl. The Cosumnes River flows southwest through approximately 900 feet of the far northern portion of the Historic Rancheria site.

Soils

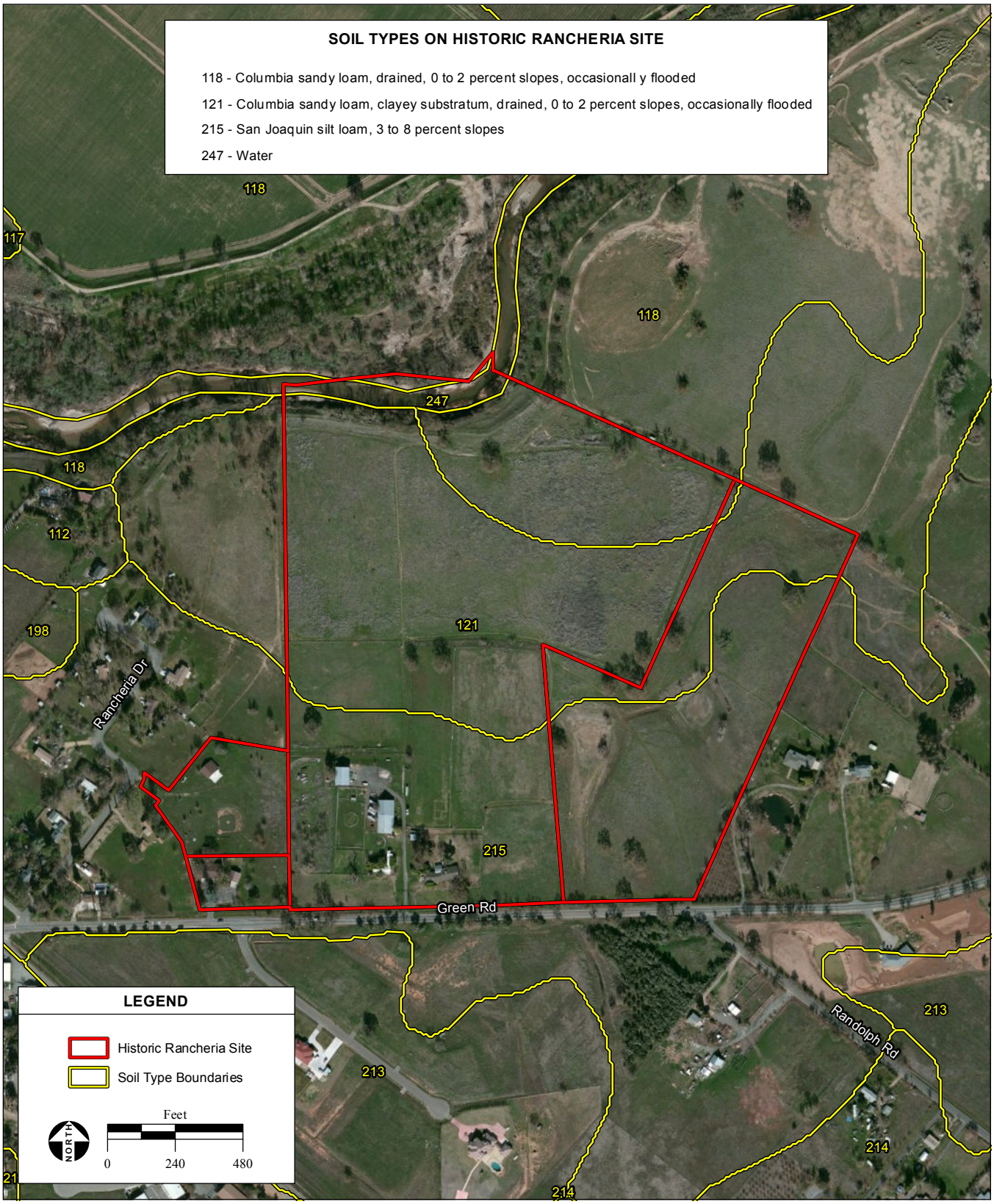
The USDA NRCS has surveyed and mapped soils for the Historic Rancheria site (**Figure 3.2.3**). Each survey maps soil units and provides a summary of major physical characteristics for each unit with management recommendations. General data on capability classes is presented in **Table 3.2-1**. A brief description of each soil unit mapped on the Historic Rancheria site and estimated site percentages are listed below.

118-Columbia Sandy loam

This very deep, somewhat poorly drained, nearly level soil is typically found on floodplains. It formed in alluvium from mixed rock sources. Typically the surface layer is fine sandy loam about 12 inches thick. The underlying material to a depth of 60 inches is stratified silt loam, fine sandy loam, and sand. This soil, with slopes ranging from 0 to 2 percent, is located in the northeast portion of the Historic Rancheria site and comprises approximately 12.9 percent of the site.

121-Columbia Sandy Loam

This very deep, somewhat poorly drained, nearly level soil is generally found on floodplains. It formed in alluvium from mixed rock sources. Typically the surface layer is sandy loam about 11 inches thick. The upper 32 inches of the underlying material is fine sandy loam to silt loam. The lower material, to a depth of 60 inches is clay loam. This soil is located within the middle portions of the Historic Rancheria site



SOURCE: UC-G Aerial Photograph, 2/2012; USDA NRCS Soil Survey Data for Sacramento County, 10/1998-3/2012; AES, 2014

Figure 3.2-3
NRCS Soil Survey of Historic Rancheria Site

and is characterized by 0 to 2 percent slopes. This soil comprises approximately 43 percent of the Historic Rancheria site.

215-San Joaquin Silt loam

This moderately well drained, undulating and gently rolling soil is on dissected low terraces. It is moderately deep to a hardpan. If formed in alluvium derived from granite rock sources. Typically, the surface layer and the upper part of the subsoil are silt loam about 23 inches thick. The next subsoil is clay about 5 inches thick then to depth of 60 inches is indurated hardpan. This soil, with slopes ranging from 3 to 8 percent, is located within the southern area of the Historic Rancheria site and comprises approximately 43 percent of the site.

Soil Properties

As shown on **Figure 3.2-3**, the Historic Rancheria site is comprised primarily of Columbia sandy loam and San Joaquin silt loam. The very deep, somewhat poorly drained, nearly level Columbia sandy loam soil has good hydrologic soil ratings and moderate low to high saturated hydrologic conductivity (Ksat). Soils capability classes for the Historic Rancheria site ranges from II to III (**Table 3.2-4**). Soil erosion susceptibility is moderate to severe for all soils on the Historic Rancheria site; however, soils are not prone to expansion or corrosivity. **Table 3.2-4** shows soil characteristics for the Historic Rancheria site which pertain to stormwater runoff and the potential for erosion.

TABLE 3.2-4
HISTORIC RANCHERIA SITE SOIL PROPERTIES

Soil	Percent of Site	Hydrologic Soil Group	Drainage Class	Saturated Hydraulic Conductivity Ksat (in/hr)	Erosion Susceptibility	Capability Class (irrigated – non-irrigated)
Columbia sandy loam, drained, 0 to 2 percent slopes, occasionally flooded	14.3	A	Somewhat poorly drained	High (1.98 to 5.95)	Moderately to severe	IIw-IIIw
Columbia sandy loam, clayey substratum, drained, 0 to 2 percent slopes, occasionally flooded	43.8	A	Somewhat poorly drained	Moderately low to moderately high (0.06 to 0.20)	Moderately to severe	IIw-IIIw
San Joaquin silt loam, 3 to 8 percent slopes	40.6	C	Moderately well drained	Very low (0.00 to 0.00)	Moderately to severe	IIIe-IIIe
Source: NRCS, 2014.						

Seismicity

Seismic hazards at the Historic Rancheria site are similar to those of the Twin Cities site due to the close proximity of the two alternative sites; refer to the description of seismic hazards in **Section 3.2.1**. **Figure 3.2-2** identifies the faults nearest the Historic Rancheria Site.

Liquefaction

The Historic Rancheria site is not a known liquefaction area (Sacramento County, 2011). The soils identified within the Historic Rancheria site, discussed above, do not pose a risk for liquefaction.

Lateral Spreading

The relatively flat topography of the Historic Rancheria site and subsurface conditions indicate that potentially liquefiable sand layers beneath ground surface are not present or relatively thin and isolated; therefore, the potential for lateral spreading is low.

Mineral Resources

No identified mineral resources (i.e., gravel and/or sand) or notable geothermal resource areas are known to be present within the Historic Rancheria site boundaries (CDNR, 2011).

3.2.3 ELK GROVE MALL SITE – ALTERNATIVE F

Geological Setting

The Elk Grove Mall site (Mall site), located approximately 6.4 miles northwest of the Twin Cities site and 5.7 miles southwest of the Historic Rancheria site, is situated in the City of Elk Grove within the Sacramento Valley. The Mall site lies within the Great Valley, and surficial deposits on the Mall site are similar to those found on the Twin Cities and Historic Rancheria sites. A description of the geological setting is provided in **Section 3.2.1**.

Site Topography

The Mall site is relatively flat with little differentiation in topography. The Mall site, partially developed as a retail mall, has existing parking lots and buildings as well as building pads graded to drain surface water to existing storm drain outlets. Elevations on the Mall site range from approximately 30 to 50 feet above msl.

Soils

The USDA NRCS has surveyed and mapped soils for the Mall site (**Figure 3.2-4**). Each survey maps soil units and provides a summary of major physical characteristics for each unit with management recommendations. General data on capability classes is presented in **Table 3.2-1**. A brief description of each soil unit mapped on the Mall site and estimated site percentages are listed below.

SOURCE: UC-G Aerial Photograph, 2/2012; USDA NRCS Soil Survey Data for Sacramento County, 10/1998-3/2012; AES, 2014

Figure 3.2-4
NRCS Soil Survey of the Elk Grove Mall Site

151-Galt Clay

This is a moderately well drained soil found on low terraces. The surface layer is typically grayish brown clay with a fine texture surface layer up to a depth of 13 inches. This soil unit comprises approximately 49.1 percent of the Mall site and is located within the western portion of the site.

213-San Joaquin Silt Loam

Refer to **Section 3.2.1** for a description of 213-San Joaquin silt loam. This soil unit, found primarily in the northern and southwestern regions of the site, comprises approximately 35.7 percent of the Mall site.

216-San Joaquin-Durixeralfs Complex

This soil unit is a mix of 55 percent San Joaquin soil and 35 percent Durixeralfs soils. The San Joaquin soil is found in areas that are relatively undisturbed, while Durixeralfs are in graded areas from which most or all of the surface soil layer has been removed. This soil unit is found in the center region of the Mall site. This soil unit contains a clay surface layer of up to 6 inches. Below the clay is clay loam to a depth of 20 inches. This soil unit comprises approximately 15.2 percent of the Mall site.

Soil Properties

As shown on **Figure 3.2-4**, the Mall site is comprised primarily of Galt clay series and San Joaquin series. These deep, moderately well drained series have very low saturated hydrologic conductivity (Ksat). Erosion susceptibility is moderately severe to severe for these soils, with capability class ranging from III to IV. Soils are not prone to expansion or concrete corrosivity (NRCS, 2014). **Table 3.2-5** shows soil characteristics for the Mall site which pertain to stormwater runoff and the potential for erosion.

TABLE 3.2-5
ELK GROVE MALL SITE SOIL PROPERTIES

Soil	Percent of Site	Hydrologic Soil Group	Drainage Class	Saturated Hydraulic Conductivity Ksat (in/hr)	Erosion Susceptibility	Capability Class (irrigated – non-irrigated)
Galt clay, leveled, 0 to 1 percent slopes	49.1	D	Moderately well drained	Very low (0.00 to 0.00)	Severe	IIIs-IIIs
San Joaquin silt loam, leveled, 0 to 1 percent slopes	35.7	C	Moderately well drained	Very low (0.00 to 0.00)	Moderately to severe	IIIs-IIIs
San Joaquin-Durixeralfs complex, 0 to 1 percent slopes	15.2	C	Moderately well drained	Very low (0.00 to 0.00)	Moderately to severe	IVs-IVs
Source: NRCS, 2014						

Seismicity

Seismic hazards at the Mall site are similar to those of the Twin Cities and Historic Rancheria sites due to the close proximity of the three alternative sites. A description of seismic hazards is provided in **Section 3.2.1**. **Figure 3.2-2** identifies the faults nearest the Mall site.

Liquefaction

The Mall site is not a known liquefaction area (Sacramento County, 2011). The soils identified within the Mall site do not pose a risk for liquefaction. Accordingly, the Elk Grove Mall Site does not have liquefaction potential.

Lateral Spreading

Due to the relatively flat topography of the Mall site and given there is no substantial risk of liquefaction in the vicinity of the site, it is unlikely lateral spreading will occur.

Mineral Resources

No identified mineral resources (i.e., gravel and/or sand) or notable geothermal resource areas are known to be present within the Mall site boundaries (CDNR, 2011).

3.3 WATER RESOURCES

This section provides a description of surface water and groundwater features including watersheds, drainage, flooding, and water quality in the vicinity of the Twin Cities, Historic Rancheria, and Elk Grove Mall sites. Water resources designated as waters of the U.S. are discussed in **Section 3.4**, Biological Resources. **Section 3.10**, Public Services, describes existing water supply facilities and regulatory requirements for wastewater treatment and disposal. The general and site-specific profiles of water resources contained herein provide the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.3, Section 4.14**, and **Section 4.15** respectively.

3.3.1 TWIN CITIES SITE – ALTERNATIVES A, B, AND C

Surface Water

Watershed

The 282-acre Twin Cities site is located within the Laguna Creek subwatershed contained within the Cosumnes River Watershed of the Lower Cosumnes-Lower Mokelumne Watershed Hydrological Unit (HU) (HUC 18040005). The Cosumnes River watershed covers approximately 940 square miles (approximately 600,000 acres), from its headwaters in the Sierra Nevada Mountains to its confluence with the Mokelumne River in the Sacramento-San Joaquin Delta (Delta) to the southwest of the Twin Cities site. Elevations in the watershed range from a peak of 7,500 feet to slightly below mean sea level (msl) in the Delta. The watershed boundaries lie adjacent to the American River watershed to the north and east, the Mokelumne watershed to the south, and the Delta to the west. The watershed includes portions of El Dorado, Amador, and Sacramento counties (Robertson-Bryan, 2006).

The Cosumnes River Watershed crosses the Sierra Nevada and Central Valley physiographic provinces, respectively. The upper watershed is in the Sierra Nevada province, which includes steep-gradient, bedrock controlled perennial streams that start in mountain meadows. The upper watershed supports approximately 172,000 acres of conifer forest (Robertson-Bryan, 2006). The Sierra Nevada today is a mixture of private and public lands, mainly El Dorado National Forest, as well as some Bureau of Land Management holdings. The lower watershed is within the Central Valley, which contains the low-gradient, alluvial sections of river that are linked to broad floodplains that make up much of the valley floor (Moyle et al. 2003 cited in Robertson-Bryan, 2006). Land use in the lower watershed includes over 50,000 acres of cropland and nearly 16,000 acres of orchards and vineyards (Robertson-Bryan, 2006).

Laguna Creek, located along the northern boundary of the Twin Cities site, is approximately 50 miles long and drains approximately 185 square miles from its confluence with the Cosumnes River to the top of its watershed near the junction of Highway 104 and Ione Michigan Bar Road. The Laguna Creek watershed begins at about 15 feet above msl at the creek's confluence with the Cosumnes River, and extends to around 900 feet above msl at the top of the watershed. Agriculture and grazing land uses

dominate the Laguna Creek Watershed (Robertson-Bryan 2011). Laguna Creek flows are supplemented by year-round discharges from the Sacramento Municipal Utilities District (SMUD) Rancho Seco decommissioned nuclear power generating facility, which discharges into Hadselville Creek, which flows into Laguna Creek approximately 10.5 miles upstream of the Twin Cities site. Skunk Creek also contributes to Laguna Creek as it flows northwest from the City of Galt (City) wastewater treatment plant (WWTP) located immediately west of the Twin Cities site into Laguna Creek. During the irrigation season, typically May through October, riparian users divert nearly all flow in Laguna Creek for irrigation, and little flow reaches the lower portion of Laguna Creek west of Highway 99 near the Twin Cities site (**Appendix K**).

Site Drainage

Stormwater runoff from the Twin Cities site is generally sheet flow with a convergence towards the northern border with Laguna Creek. However, there are several man made features, primarily agricultural fields, irrigation ditches, and roads that alter the stormwater flow direction on a smaller scale. A drainage channel parallels the western side of the railroad west of the site boundary that receives effluent flow from the adjacent Wastewater Treatment Plant (WWTP). Two channels flow across the site from east to west, and both flow under railroad bridges/culverts before discharging into the large drainage channel that parallels the western side of the railroad. The southern channel turns into a pond prior to out-letting to the large channel to the west of the railroad. The northern man-made ditch connects this western channel through a culvert to the west.

West Stockton Boulevard is a frontage road along Highway 99 to the east of the Twin Cities site. A roadside ditch to the north of West Stockton Boulevard terminus and the eastern boundary of the Twin Cities site conveys stormwater runoff from the frontage road towards Laguna Creek. Two 24-inch diameter culverts allow off-site stormwater to pass under Highway 99 and West Stockton Boulevard into the northern drainage channel. Three 24-inch diameter culverts convey water under Highway 99 and Stockton Boulevard and into the southern drainage channel. The water in these drainage channels primarily originates from irrigation and/or drainage channels along agricultural lands to the east of Highway 99. The highway spans two small bridges towards the north end of the site: one bridge allows a small drainage channel to outlet into the ditch that flows along Stockton Boulevard and the second northernmost bridge spans Laguna Creek (**Appendix K**).

The Twin Cities site has been configured into several agricultural fields with elevated dirt roads separating the fields. The elevated roads act as berms for the fields to be flooded with irrigation water. The northern field drains towards Laguna Creek. The fields in the middle of the Twin Cities site drain towards the adjacent drainage channels (**Appendix K**). A majority of the soil on the Twin Cities site has low and very low infiltration rates (**Section 3.2.1**).

Floodplain

Executive Order (EO) 13690, which amends EO 11988, requires that Federal agencies evaluate the potential effects of any actions they may take in a floodplain. Specifically, Order 11988 states that agencies shall first determine whether the Proposed Action will occur in a floodplain. Second, if an agency proposes to allow an action to be located in a floodplain, "the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains," which EO 13690 amended to add that, "[w]here possible, an agency shall use natural systems, ecosystem processes, and nature-based approaches when developing alternatives for consideration." Finally, if the only practicable alternative action requires siting in a floodplain, the agency shall "minimize potential harm to or within the floodplain."

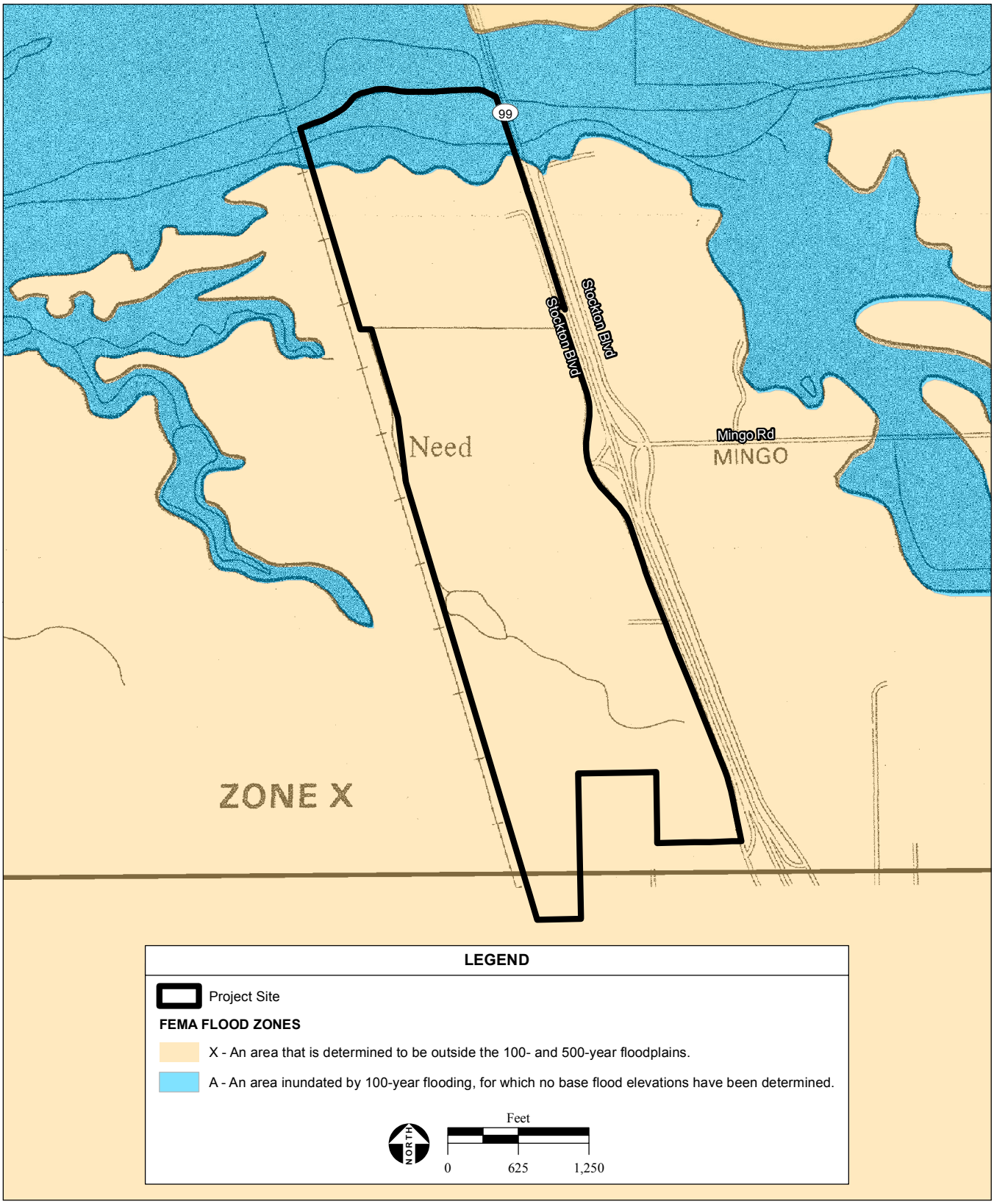
The Disaster Relief Act of 1974 as amended by the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 created the Federal Emergency Management Agency (FEMA), which is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers (USACE) studies. FEMA is also responsible for distributing Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas, including 100-year floodplains.

A 100-year flood event is defined as a flood event which has a one percent chance of occurring in any given year. The northernmost portion of the Twin Cities site is within the FEMA 100-year floodplain (FEMA, 2012a; **Figure 3.3-1**). However, the majority of the site is designated Zone X, which represents an area determined to be outside of both the 100-year and 500-year floodplains.

Surface Water Quality

The Federal Clean Water Act (CWA), 33 U.S.C. Section 1301(a)(2), sets forth national goals that waters shall be "fishable, swimmable" waters (Section 101 (a)(2)). The CWA addresses both point and non-point sources of pollution (Sections 402 and 319, respectively), both of which are controlled through the National Pollution Discharge Elimination System (NPDES). A NPDES permit must be obtained in order to discharge pollutants into "Waters of the U.S." In some states, the Environmental Protection Agency (EPA) has delegated permitting authority to the regional water quality agency, in this case the State Water Resources Control Board (SWRCB). However, the EPA retains authority to regulate discharges to waters on tribal lands. The CWA also directs states to establish water quality standards for waterways in their jurisdiction and to review and update these standards every three years (Section 303(c)) (**Table 3.3-1**).

Section 303(d) of the CWA requires states to periodically prepare a list of all surface waters in their respective jurisdictions for which beneficial uses of the water – such as for drinking, recreation, aquatic habitat, and industrial use – are impaired by pollutants. These include water bodies that do not meet state surface water quality standards and are not expected to improve within the next two years.



SOURCE: FEMA Firm Data, 1988, FEMA Q3 Data, 1996; Sacramento County GIS 2012; AES, 2014

Figure 3.3-1
FEMA Flood Zones - Twin Cities Site

States establish a priority ranking of these impaired waters for purposes of developing water quality control plans that include Total Maximum Daily Loads (TMDLs). A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and includes an allocation for each of the pollutant's sources. These water quality control plans describe how an impaired water body will meet water quality standards through the use of TMDLs.

The Porter-Cologne Water Quality Control Act provides the basis for surface water and groundwater quality regulation within California. The act established the authority of the SWRCB and the nine Regional Water Quality Control Boards (RWQCBs). The act requires the State, through the SWRCB and the RWQCBs, to designate beneficial uses of surface waters and groundwater and specify water quality objectives designed to protect those uses. These water quality objectives are presented in the Regional Water Quality Control Plans (Basin Plans).

The surface water quality standards for State of California include both narrative and numerical water quality objectives to keep California's waters swimmable, fishable, drinkable, and suitable for use by industry, agriculture and the citizens of the state. The water quality objectives are summarized in **Table 3.3-1**.

TABLE 3.3-1
WATER QUALITY STANDARDS FOR CALIFORNIA SURFACE WATERS

Constituent	Water Quality Objective
Fecal Coliform	In waters designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.
Dissolved Oxygen	Within the legal boundaries of the Delta, the dissolved oxygen (DO) concentration shall not be reduced below: 7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/l in all other Delta waters except for those bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use. For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily DO concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation. The DO concentrations shall not be reduced below the following minimum levels at any time: Waters designated WARM 5.0 mg/l Waters designated COLD 7.0 mg/l Waters designated SPWN 7.0 mg/l

Constituent	Water Quality Objective
Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. In addition, the following temperature objectives apply to surface waters: Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California* including any revisions. There are also temperature objectives for the Delta in the State Water Board's *2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*. ▪ The natural receiving water temperature of inland surface waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. ▪ The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8°C) above natural receiving water temperature In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.
pH	The pH shall not be depressed below 6.5 nor raised above 8.5.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms. Detrimental responses include, but are not limited to, decreased growth rate and decreased reproductive success of resident or indicator species. There shall be no acute toxicity in ambient waters. Acute toxicity is defined as a median of less than 90 percent survival, or less than 70 percent survival, 10 percent of the time, of test organisms in a 96-hour static or continuous flow test. There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community. Attainment of this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, or toxicity tests, or other methods selected by the Water Board. The Water Board will also consider other relevant information and numeric criteria and guidelines for toxic substances developed by other agencies as appropriate. The health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.
Radioactive Substances	Radionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life. At a minimum, waters designated for use as domestic or municipal supply shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of Section 64442 and Table 64443 of Section 64443 of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated

Constituent	Water Quality Objective
	provisions as the changes take effect.
Taste and Odor	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.
Notes: mL = milliliters; mg/L = milligrams per liter; NTU = Nephelometric Turbidity Units Source: Central Valley, 2013	

The Cosumnes River is listed as a Category 5 on the California state 303(d) list impaired waters. TMDLs are identified for Sediment Toxicity (Toxicity), Invasive Species (Miscellaneous), and *Escherichia coli* (Fecal Coliform) (CSWRCB, 2010). A Category 5 impaired water designation indicates the water quality standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed. The Category 5 designation is the highest priority ranking given by the State to recognize the need for implementation of a TMDL (CSWRCB, 2010).

Groundwater

The Twin Cities site overlies the extensive groundwater basin of the Central Valley, specifically the Cosumnes Subbasin of the San Joaquin Valley Groundwater Basin (refer to Section 3.2 for a detailed geologic setting). The Cosumnes Subbasin is defined by the areal extent of unconsolidated to semi-consolidated sedimentary deposits that are bounded to the north and west by the Cosumnes River, the south by the Mokelumne River, and on the east by consolidated bedrock of the Sierra Nevada Mountains (CDWR, 2006). The Cosumnes Subbasin aquifer system is comprised of continental deposits of Late Tertiary to Quaternary age. These deposits include Younger Alluvium, Older Alluvium, and Miocene/Pliocene Volcanics. Groundwater in the vicinity of the Twin Cities site is available in the shallow, near surface unconfined aquifer materials and deeper, confined aquifers. The shallow unconfined aquifer is recharged by local precipitation and through percolation from surrounding water bodies, including rivers, creeks and earthly drainage ditches. The thickness of the shallow aquifer ranges from 200 feet to 1,000 feet below the ground surface (Galt, 2011).

Groundwater Level

The four production wells located on the Twin Cities site extract groundwater from the Cosumnes Subbasin, which has an estimated groundwater storage capacity of six million acre-feet (AEG, 2014). There is localized groundwater drawdown in the vicinity of the Twin Cities site, but the Cosumnes Subbasin as a whole does not appear to be in a state of overdraft (**Appendix K**).

The primary source of recharge in the vicinity of the Twin Cities site is deep percolation of irrigation water past crop roots, sometimes referred to as recharge from excess applied irrigation water. Of the

average 13.3 million acre-ft of groundwater recharged annually from 1962 to 2003, less than 1 percent was from infiltration from the Delta, 19 percent was from streams by way of stream-flow leakage, and 79 percent was from the landscape processes, which include recharge from excess applied irrigation water and from precipitation (**Appendix K**). Average annual groundwater recharge varies between dry, typical, and wet years; 7.5, 12.1, and 25.6 million acre-ft, respectively. During dry years, recharge is reduced to a little more than one-half the average recharge; recharge during wet years is almost double the average. In typical and dry years, the contribution from stream-flow leakage was about 15 percent. However, during wet years, the streams generally flow at higher rates for longer periods of time and the simulated contribution from stream-flow leakage increases to 24 percent (AEG, 2014).

Groundwater elevation data from the CDWR Water Data Library show there are eight active and historic wells located within a one-mile radius of the Twin Cities site (CDWR, 2014). Groundwater elevations in the vicinity of the Twin Cities site were measured at State Well Number (SWN) 06N06E33L001M, located approximately 0.8 miles north of the northern border of the Twin Cities site across Laguna Creek, and SWN 05N06E10P001M, located immediately north of Twin Cities Road between West Stockton Boulevard and Highway 99, approximately 0.1 miles to the southeast of the site. Groundwater elevations were 21.69 feet below ground surface (BGS) north of the site and 38.7 feet BGS south of the site on March 17, 2014. Since the 1960's, groundwater elevations have ranged from 22.6 to 58.4 feet BGS (north of the site) and 22.6 to 58.4 feet BGS (south of the site). Additional groundwater elevations were measured on February 24, 2014 at SWN 05N06E089R001M, located approximately 0.8 miles west of the Twin Cities site adjacent to the City's WWTP, and reported as 34.22 feet BGS. Groundwater elevation was measured on March 13, 2014 at SWN 06N06E34P001M, located approximately 0.9 miles north east of the Twin Cities site across Laguna Creek, and reported at 33.46 feet BGS. Historically, groundwater elevations have ranged from 25.0 to-61.0 feet BGS (west of the site) and 25.5 to 71 feet BGS (east of the site) since the 1960's (CDWR, 2014).

A groundwater elevation contour map of Sacramento County prepared by Sacramento County Water Agency (SCWA) for 1969 shows the direction of groundwater flow in the vicinity of the Twin Cities site to be generally from northwest to southeast (SAWC, 2011). However, a 2010 groundwater elevation contour map prepared by SCWA shows the direction of groundwater flow in the vicinity of the Twin Cities site to be generally west to east (SCWA, 2011).

Groundwater Supply

Water is currently supplied to the Twin Cities site through three agricultural/irrigation wells (AG-3, AG-4, and AG-5), one domestic well (DW-1), and two agricultural/irrigation sumps (AG-1 and AG-2) on the Twin Cities site (shown in Figure 2 of **Appendix K**). The agriculture/irrigation wells are primarily used to supply irrigation water for crops during the dry season, while the domestic well is used to supply a residence on the Twin Cities site. The agricultural/irrigation sumps are used to move water around the site. The wells have been reported to supply the following yields: 400 gpm (both AG-3 and AG-5), 1,100 gpm (AG-4), and 50 gpm (DW-1) (**Appendix K**).

Existing agriculture operations on the Twin Cities site use approximately 933 gpm during the summer-dry season (June through September) (**Appendix K**).

Groundwater Quality

Under the mandate of the Safe Drinking Water Act, the USEPA sets legally enforceable National Primary Drinking Water Regulations (primary standards) that apply to public water systems (for this project, the public water system would be classified as non-transient and non-community (NTNC). These standards are established to protect human health by limiting the levels of contaminants in drinking water. The USEPA does not oversee the construction and permitting of groundwater wells, but requires that public health standards, such as an effectively installed sanitary seal, are in place, and recommends that water systems be installed to meet California Department of Public Health Standards (**Appendix I**). The USEPA will also primarily establish monitoring and operational requirements, which will typically be specific to the project area. Source water monitoring requirements for NTNC public water systems typically include monthly coliform and annual nitrate sampling, as well as initial monitoring of inorganic chemicals, volatile organic chemicals, non-volatile synthetic organic chemicals, secondary drinking water standard constituents, and general chemistry (including alkalinity, hardness, and minerals). The frequency of sampling varies, and may be reduced over time.

The EPA also defines National Secondary Drinking Water Regulations (secondary standards) for contaminants that cause cosmetic and aesthetic effects, but not health effects. The EPA recommends that these secondary standards be met but does not require systems to comply with them. Both primary and secondary drinking water standards are expressed as either Maximum Contaminant Levels (MCLs), which define the highest level of a contaminant allowed in drinking water, or Maximum Contaminant Level Goals (MCLGs), which define the level of a contaminant below which there is no known or expected risk to health.

The City maintains several groundwater wells in the vicinity of the site; testing for a variety of organic and inorganic constituents have shown the local water supply generally meets all primary drinking water standards established for public health protection (City of Galt, 2010). However, iron and manganese concentrations have exceeded secondary drinking water standards established for taste and odor control in some wells in the northeastern area of the City; these iron and manganese concentrations are then removed via treatment prior to distribution. Additionally, there has been some impairment in the Cosumnes Subbasin from pesticides contamination and several of the City's drinking water wells have wellhead treatment systems to remove arsenic, but post-treatment levels have been slightly above primarily drinking standards (Galt, 2010).

Table 3.3-2 provides an average water quality summary for groundwater from the City wells monitoring for the period of January 1 to December 31, 2012. All other constituents for which tests were performed were not detected above the laboratory method reporting limit.

TABLE 3.3-2
THE CITY OF GALT WATER QUALITY MONITORING 2012 RESULTS (SYSTEMWIDE AVERAGE)

Constituent	Units	Groundwater Average	Groundwater Standard
Total Coliform Bacteria[1]	# Tests	ND	Present in 2 or more monthly samples
Antimony[1]	ppb	0.013	6
Arsenic[1]	ppb	6.6	10
Barium[1]	ppm	0.16	1
Cadmium[1]	Ppb	0.31	5
Chlorine[1]	ppm	0.97	4.0
Fluoride[1]	ppm	0.047	1
Methoxychlor[1]	Ppb	0.0015	0.09
Iron[2]	ppb	38.8	300
Manganese[2]	ppb	0.1	50
Zinc[2]	ppm	0.0008	5
Total Dissolved Solids[2]	ppm	167	1000
Specific Conductance [2]	ppm	207	1600
Chloride[2]	ppb	4.6	500
Sulfate[2]	ppm	2.8	500
Sodium	ppm	0	Mo
Copper	ppm	90th%=0.22	1.3

1: subject to primary standards
2: subject to secondary standards
Source: Galt PWD, 2013

Groundwater quality of the Cosumnes Subbasin is characterized by calcium-magnesium or calcium-sodium bicarbonate types with overall groundwater quality considered to be good (Galt, 2010).

During a Phase I Environmental Site Assessment reconnaissance, several minor issues were identified that warrant further characterization prior to construction (**Appendix Q**). These issues, including potential leaking fluids from agricultural pumps, household/agricultural waste, and soil discoloration near an agricultural area on the property, are unlikely to have resulted in groundwater contamination; however, a sampling plan is included as Appendix R. Refer to Section 3.12.3 for further information.

3.3.2 HISTORIC RANCHERIA SITE – ALTERNATIVES D AND E

Surface Water

Watershed

The 75-acre Historic Rancheria site is situated within the same watershed and subbasin as the Twin Cities site, described in **Section 3.3.1**.

Site Drainage

The Historic Rancheria site has gentle rolling topography with a cross slope of approximately one percent. There is a high point on Green Road that coincides with the location of an existing residential driveway between Danlar Court and Randolph Road. The soil on the Historic Rancheria site varies from high infiltration to low infiltration rates (refer to **Section 3.2.2** for further discussion). Stormwater runoff in the vicinity of the Historic Rancheria site generally flows to the north towards the Cosumnes River, which borders the northern portion of the site, and eventually to the Sacramento-San Joaquin Delta. There are also several man-made features that alter the storm water flow direction on a smaller scale, such as the levee located along the southern bank of the Cosumnes River.

No drainages connect to the Cosumnes River on the Historic Rancheria site. A 24-inch diameter culvert located west of the driveway links roadside ditches along Green Road. Immediately east of the driveway is a double culvert crossing with 24-inch and 18-inch diameter corrugated metal pipes (CMPs). Two existing stock ponds on the east side of the Historic Rancheria site are hydraulically connected and drain southward into the double culvert to the east of the driveway. When the stock ponds seasonally fill with water, the 24-inch and 18-inch diameter CMPs convey stormwater from the site under Green Road and discharge into a channel on a property south of the site (**Appendix I**).

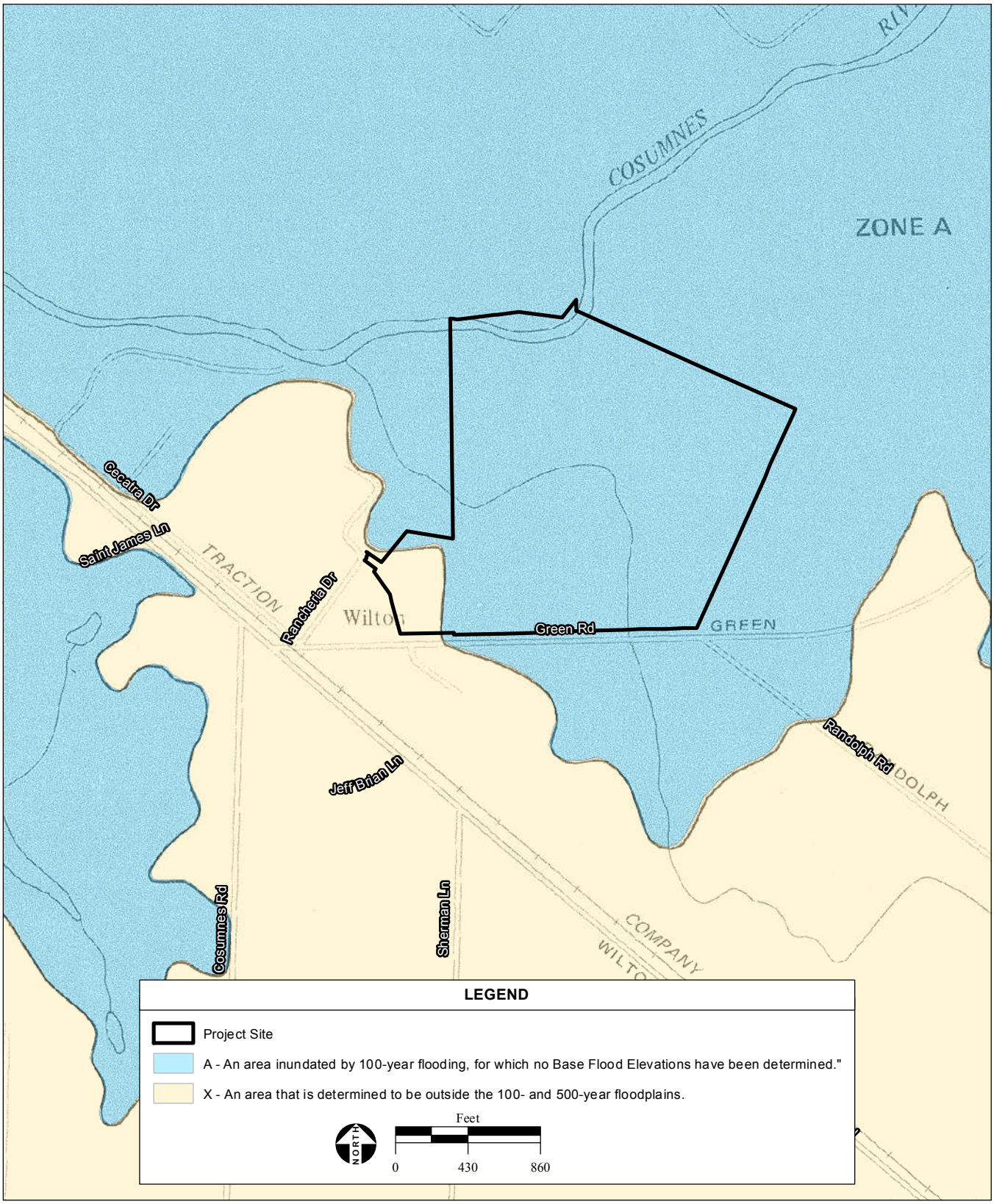
Floodplain

A majority of the Historic Rancheria site lies within the Cosumnes River 100-year flood plain (**Figure 3.3-2**). This large portion of the Historic Rancheria site is designated AE, defined as an area that could be inundated by a 100-year flood event. A small portion of the site, in the southwestern corner, is designated Zone X, which represents areas determined outside of both the 100-year and 500-year floodplains (FEMA, 2012b).

The present-day Cosumnes River is separated from the historic floodplain by levees. During high flow events, the water level in the Cosumnes River channel can be 10 feet higher than the area beyond the levee. Between Dillard Road and Wilton Road, located southeast of the Historic Rancheria site, the historic Cosumnes River floodplain width varies from 1 to 3 miles. In the vicinity of the Historic Rancheria site, the levees adjacent to the Cosumnes River are approximately 15 feet high. The south bank levee, which protects adjacent land from flooding from Wilton Road to Dillard Road, is up to 30 feet high in some areas. The north bank levees are separate and much smaller, with heights of about 8 to 15 feet (RBI, 2006).

Surface Water Quality

The major surface water feature adjacent to the Historic Rancheria site is the Cosumnes River, which travels southwest along the north boundary of the site. There are also numerous unnamed seasonal waterways in the vicinity of the Historic Rancheria site. Water quality of the Cosumnes River is discussed above in **Section 3.3.1**.



SOURCE: FEMA Firm Data, 1988, FEMA Q3 Digitized Data, 1996; "Galt, CA" USGS 7.5 Minute Topographic Quadrangle, T5N, R5E, Unsectioned Area of Sanjon Delos Moquelumnes, Mt. Diablo Baseline & Meridian; Sacramento County GIS 2012; AES, 10/28/2015

Figure 3.3-2
FEMA Flood Zones - Historic Rancheria

Groundwater

Similar to the Twin Cities site, the Historic Rancheria site is situated above the Cosumnes Subbasin of the San Joaquin Valley Groundwater Basin. Refer to **Section 3.3.1** for a description of groundwater resources at the Historic Rancheria site.

Groundwater Levels

There does not appear to be localized groundwater overdraft in the vicinity of the Historic Rancheria site, and the Cosumnes Subbasin as a whole does not appear to be in a state of overdraft (**Appendix K**).

Groundwater elevation data from the California Department of Water Resources (CDWR) Water Data Library in the vicinity of the Historic Rancheria site were measured at SWN 06N06E01G001M, located approximately 0.6 miles south. Groundwater elevation was 22.8 feet BGS when tested on March 13, 2014 (CDWR, 2014). Since 1990, groundwater elevations in this well have ranged from 2.1 to 26.9 feet BGS. Groundwater beneath the Historic Rancheria site is likely at a higher elevation than indicated by this well as the Historic Rancheria site is located adjacent to the Cosumnes River.

A groundwater elevation contour map prepared by the Sacramento Central Groundwater Authority for fall of 2010 shows the direction of groundwater flow in the vicinity of the Historic Rancheria site to be generally west-northwest toward a groundwater drawdown area near the City of Elk Grove (SCGA, 2010). A groundwater elevation contour map prepared by the County of Sacramento Department of Water Resources (SCDWR) for spring 2007 shows an additional cone of depression to the south of the Historic Rancheria site that is outside the boundary of the 2010 map contours (SCDWR, 2007).

Groundwater Supply

Currently, there are two agricultural/irrigation wells (AG-1 and AG-2) and one domestic well (DW-1) on the Historic Rancheria site, shown in Figure 4 of **Appendix K**. DW-1 is used to provide water to a residence, minor landscaping irrigation, and livestock on the property. AG-1 has not been used in several years but was previously used for irrigation of grassland, and AG-2 is currently used for irrigation, though only for a few days each year. (**Appendix K**). The three wells on the Historic Rancheria site are estimated to have a combined yield of approximately 470 gpm (**Appendix K**).

The nearest municipal water supply system is the Elk Grove Water District (EGWD) located approximately 3.0 miles east of the Historic Rancheria site (EGWS, 2013).

Groundwater Water Quality

The SWRCB GeoTracker Groundwater Ambient Monitoring Assessment (GAMA) database for groundwater quality data indicates seven wells within 10,000 feet of the Historic Rancheria site located in two clusters: one to the northwest and one to the southeast of the Historic Rancheria site. Well data indicate no exceedance of the California MCLs. Several of the wells were reported to contain moderate

concentrations of nitrates; however, none of the concentrations exceeded 30 mg/L (nitrates MCL = 45 mg/L) and none of the nitrate data indicated strong upward trend in nitrate concentrations (CSWRCB, 2014; **Appendix K**).

3.3.3 ELK GROVE MALL SITE – ALTERNATIVE F

Surface Water

Watershed

The Elk Grove Mall site (Mall site) is located within the Lower Sacramento River Hydrological Region (HUC 18020109), which covers approximately 17 million acres (27,000 square miles) and extends from the Modoc Plateau and Cascade Rage at the Oregon border south to the Delta. The Sacramento River Basin includes all watershed and tributaries to the Sacramento area that are north of the Cosumnes River Watershed. The Mall site is located within the Shed C Watershed. The Shed C Watershed lies in southern Sacramento County and covers nearly 7,900 acres. Of that total, approximately 2,100 acres lie within the City of Elk Grove. The watershed generally slopes from east to west with an average slope of about 0.10 percent. The existing land use within the watershed is agricultural with the exception of the partially developed Lent Ranch Planning Area (City of Elk Grove, 2011).

Downstream of the Mall site, runoff is conveyed in a well-defined agricultural drainage channel, which is referred to as the Shed C Channel. The Shed C Channel begins at the Lent Ranch Planning Area detention basin and conveys runoff the southwest for approximately 2.4 miles until it reaches Bruceville Road. At that point, the channel exits the City of Elk Grove and continues west for approximately 4.2 miles where it crosses under I-5 and enters the Stone Lakes National Wildlife Refuge. The existing Shed C Channel is essentially a man-made agricultural ditch that has been highly altered from its natural form. Its original alignment has been straightened and it has numerous 90 degree bends (City of Elk Grove, 2001).

Site Drainage

The Mall site is generally flat with existing parking lots and fields graded to drain towards existing storm drain inlets. Although the previous ultimate development on the Mall site stalled before completion, much of the site improvements were completed including the construction of roads and parking lots, buildings, and underground utilities, including on-site components of a regional storm drainage system. A storm drain trunk line travels along Promenade Parkway adjacent to the Mall site. At the intersection of Bilby Road and Promenade Parkway a 72-inch diameter storm drain heads west along Bilby Road, conveying the stormwater from the Mall site and adjacent developed area to a 79 acre-feet stormwater treatment and detention basin located approximately 0.5 miles west of the Mall site. The offsite detention basin has been designed and built to accommodate runoff from the Mall site and surrounding area including the City of Elk Grove and the Lent Ranch Planning Area. As discussed above, downstream of the of the off-site detention basin runoff is conveyed in an agricultural drainage ditch eventually discharging into the Stone Lakes National Wildlife Reserve.

Floodplain

The Mall site is designated Zone X and is therefore located outside both the 100-year and 500-year flood zones as well as the Folsom Dam failure area (FEMA, 2012c).

Surface Water Quality

There are no water bodies within the vicinity of the Mall site that are listed on the State impaired water body 303(d) list. The closest water body to the Mall site is the Cosumnes River, located approximately 2.1 miles southeast. Water quality of the Cosumnes River is discussed above in **Section 3.3.1**.

Groundwater

The City of Elk Grove is located within the South American Subbasin of the Sacramento Valley Groundwater Basin. The South American Subbasin is comprised of continental deposits of Later Tertiary to Quaternary age that are bounded on the east by the Sierra Nevada Mountain Ranges, on the west by the Sacramento River, on the north by the American River, and on the south by the Cosumnes and Mokelumne Rivers (CDWR, 2006). Within Sacramento County, recharge to the aquifer system occurs from a combination of sources including stream recharge (primarily from the American, Cosumnes, and Sacramento Rivers), subsurface inflows from adjacent counties, and percolation of rainfall and applied water.

Two aquifers underlie the City of Elk Grove. The shallower aquifer is the Laguna Formation, which extends 200 to 300 feet BGS. A deeper aquifer is the Mehrten Formation, which is separated from the shallower aquifer by a discontinuous clay layer, averages 1,650 feet thick. Extraction from the South Sacramento Basin has formed a cone-of-depression in the groundwater table associated with municipal pumping, which is centered south of the City of Elk Grove Boulevard between I-5 and Highway 99 (City of Elk Grove, 2009).

Groundwater Level

Groundwater elevation data from the CDWR Water Data Library in the vicinity of the Mall site is measured at SWN 06N06E18F001M, located approximately 0.5 miles south of the Mall site. Groundwater elevation was 29.38 feet BGS when tested on March 13, 2014. Since 1990, groundwater elevations in the well have ranged from 25.18 to 69.18 feet BGS (CDWR, 2014).

A groundwater elevation contour map of Sacramento County prepared by the SCWA in 2000 depicts the groundwater flow in the vicinity of the Mall site to be towards the north. Similarly, the groundwater elevation contour map of Sacramento County prepared by the SCGA for fall of 2010 shows the direction of groundwater flow in the vicinity of the Mall site to be to the north-northeast, generally toward a cone of depression located near the City of Elk Grove municipal well field (SCGA, 2010).

A review of hydrographs dating back to the early 1960s shows a fairly consistent pattern of water level trends through much of the South American subbasin. Wells outside the influence of the Cosumnes River declined from the mid-1960s to about 1980 on the order of 20 to 30 feet. From 1980 through 1986, water levels recovered on the order of 5 to 10 feet. During the 1987 through 1992 drought, water levels once again declined by 10 to 15 feet. From 1993 through 2000, much of the basin recovered by 15 to 20 feet, leaving water levels at the about the same elevation or slightly higher than they were in the mid-1980s. One exception is along the eastern subbasin margin where water levels remained fairly constant during the 1993 through 2000 recovery period. Prior to that, those eastern wells behaved similarly to other wells in the subbasin (SCDWR, 2007).

Groundwater Supply

Alternative F does not include on-site groundwater wells as an option to supply water demands; therefore groundwater supply is not analyzed as a resource at the Mall site. Water supply would be provided by the City of Elk Grove municipal water system. Additional information regarding this municipal system in provided in **Section 3.10**.

Groundwater Water Quality

Generally, groundwater quality in the Sacramento Valley has lower dissolved solids concentrations than other subregions of the Central Valley, with dissolved solids increasing as the depth increases in the aquifer systems. The Mall site is identified within the City of Elk Grove General Plan as an area having poor groundwater recharge capability. **Table 3.3-3** depicts groundwater data from the EGWD 2013 Groundwater Water Quality Report.

TABLE 3.3-3
CITY OF ELK GROVE WATER DISTRICT GROUNDWATER WATER QUALITY REPORT 2013

Constituent	Units	Groundwater Average	Groundwater Standard
Total Coliform Bacteria[1]	# Tests	0	>5% or 1
Aluminum[1]	ppm	0.24	1
Arsenic[1]	ppb	0.66	10
Barium[1]	ppm	0	1
Nitrate (as nitrate, NO3)[1]	ppm	0.57	45
Chloride[2]	ppb	0	500
Iron[2]	ppb	1.61	300
Manganese[2]	ppb	0.1	50
Total Dissolved Solids[2]	ppm	0	1000
Sodium	ppm	0	Mo
Lead	ppb	0.08	15
Copper	ppm	<5.0	1.3
Notes: [1]Subject to primary standards [2]Subject to secondary standards Source: EGWD, 2013			

3.4 AIR QUALITY

This section describes existing conditions related to air quality for the proposed project. The general and site-specific description of air quality contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.0**.

3.4.1 REGULATORY CONTEXT

Criteria Air Pollutants

Criteria Air Pollutants (CAPs) are common pollutants that have been identified by the U.S. Environmental Protection Agency (USEPA) as being detrimental to human health. CAPs are used as indicators of regional air quality. The USEPA has designated six CAPs: ozone (O_3), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb).

National Ambient Air Quality Standards

The Federal Clean Air Act (CAA) of 1970, as amended, establishes air quality standards for several pollutants. These pollutants are termed "criteria" pollutants because the USEPA has established specific concentration threshold criteria based upon specific medical evidence of health effects or visibility reduction, soiling, nuisance, and other forms of damage. These national ambient air quality standards (NAAQS) are divided into primary standards and secondary standards. Primary standards are designed to protect the public health and secondary standards are intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. Ambient air quality standards are presented in **Table 3.4-1**.

The Federal government has established NAAQS to define levels of air quality that protect the public health and welfare from the known adverse effects of air pollutants. Standards were developed for carbon monoxide (CO), lead (Pb), PM with a diameter of less than 10 or 2.5 microns (PM_{10} or $PM_{2.5}$, respectively), sulfur oxides (SO_x), O_3 (precursors NOx and ROG), and nitrogen dioxide (NO_2).

Areas are designated attainment, nonattainment, or maintenance by the USEPA depending on whether the area is below or exceed the established NAAQS. Non-attainment areas must take steps towards attainment within a specific period of time. Once an area reaches attainment for particular criteria pollutant, then the area is redesignated attainment or maintenance. The CAA places most of the responsibility on states to achieve compliance with the NAAQS. States, municipal statistical areas, and counties that contain areas of non-attainment are required to develop a State Implementation Plan (SIP), which outlines policies and procedures designed to bring the state into compliance with the NAAQS.

TABLE 3.4-1
NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutants		Primary		Secondary		Violation Criteria
		ppm	µg/m³	ppm	µg/m³	
Ozone	8 hours	0.75	157	0.075	157	The 3-year average of the annual 4th highest daily 8-hour maximum is not to be above 0.075 µg/m³ (micrograms per cubic meter)
Carbon Monoxide	8 hours	9	10,000	-	-	If exceeded on more than 1 day per year
	1 hour	35	40,000	-	-	If exceeded on more than 1 day per year
Nitrogen Dioxide	Annual average	0.053	-	0.053	-	Not to be above 0.053 ppm (parts per million) in a calendar year.
	1 hour	0.100	-	-	-	The 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor is not above 0.100 ppm.
Sulfur Dioxide	Annual average	0.03	-	-	-	Not to be above 0.03 ppm in a calendar year.
	24 hours	0.14	-	-	-	If exceeded on more than 1 day per year
PM_{10}	24 hours	-	150	-	150	Not to be above 150 µg/m³ on more than three days over three years with daily sampling
$PM_{2.5}$	Annual arithmetic mean	N-	15	-	15	The 3-year average from a community-oriented monitor is not above 15 µg/m³.
	24 hours	-	35	-	35	The 3-year average of the 98th percentile for each population-oriented monitor within an area is not above 35 µg/m³.
Lead	Rolling – Month Average	-	0.15	-	0.15	Not to be above 0.15 µg/m³.
	Quarterly Average	-	1.5	-	1.5	-

Note 1-hour NO_2 standard was implemented in January 2011.
Source: USEPA, 2014.

Hazardous Air Pollutants

In addition to the above-listed CAPs, Hazardous Air Pollutants (HAPs) is a group of chemical pollutants which can cause adverse effects to human health and/or the environment. HAPs are a list of over 188 airborne chemicals developed by the USEPA. Sources of HAPs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, cigarette smoke, and motor vehicle exhaust. Cars and trucks release at least 40 different

HAPs. The most important, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Health effects of HAPs can include cancer, birth defects, and neurological damage.

HAPs are less pervasive in the urban atmosphere than CAPs but are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. The majority of the estimated health risk from HAPs can be attributed to relatively few compounds, the most important being the HAPs found in diesel particulate matter (DPM). Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are PM that includes carbon particles or "soot." Diesel exhaust also contains a variety of harmful gases and over 40 other cancer causing substances. Exposure to DPM is a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems.

Environmental tobacco smoke (ETS) is a complex mixture of gases and fine PM; many of these compounds have been defined by the USEPA as HAPs. The composition will vary depending on heat of combustion, tobacco content and additives present, and type of filter material used. Researchers distinguish cigarette smoke as being comprised of two main components: mainstream and sidestream smoke. ETS is a combination of exhaled mainstream smoke, sidestream smoke, and compounds that diffuse through the cigarette paper.

Federal General Conformity

Under the General Conformity Rule, updated in 2010, the lead agency with respect to a federal action is required to demonstrate that the proposed federal action conforms to the applicable SIP before the action is taken. There are two phases to a demonstration of general conformity:

1) The Conformity Review process, which entails an initial review of the federal action to assess whether a full conformity determination is necessary, and

2) The Conformity Determination process, which requires that a proposed federal action be demonstrated to conform to the applicable SIP.

The Conformity Review requires the lead agency to compare estimated emissions to the applicable general conformity Council on Environmental Quality (CEQ) Reference Points (CEQ RP) (40 CFR 153 (b)(1) and (2)). If the emission estimates from step one is below the **CEQ RP**(s), then a general conformity determination is not necessary and the full Conformity Determination is not required. If emission estimates are greater than the **CEQ RP**(s), the lead agency must conduct a Conformity Determination.

Federal Class I Areas

Title 1, Part C of the CAA was established, in part, to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value. The CAA designates all international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres as "Class I areas." The CAA prevents significant deterioration of air quality in Class I areas under the Prevention of Significant Deterioration (PSD) program. The PSD Program protects Class I areas by allowing only a small increment of air quality deterioration in these areas by requiring assessment of potential impacts on air quality related values of Class I areas.

Any major source of emissions within 100 kilometers (km) (62.1 miles) from a federal Class I area is required to conduct a pre-construction review of air quality impacts on the area(s). A "major source" for the PSD program is defined as a facility that will emit (from direct stationary sources) 250 tons per year (tpy) of regulated pollutant. For certain industries, these requirements apply to facilities that emit (through direct stationary sources) 100 tpy or more of a regulated pollutant. Mobile sources (i.e. vehicle emissions) are by definition not stationary sources and are therefore not subject to the PSD program. There are no federal Class I areas within 100 km (62.1 miles) of any of the alternative sites; therefore, no pre-construction review is required for the project alternatives.

Regional Air Quality Standards

At a local level, the Sacramento Metropolitan Air Quality Management District (SMAQMD) has jurisdiction over all of Sacramento County. The SMAQMD attains and maintains air quality conditions in Sacramento County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the SMAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption, and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. SMAQMD publishes thresholds of significance for construction and operation emissions for NOx and ROG (ozone precursors) and greenhouse gases (GHGs) for projects within its jurisdiction. SMAQMD construction and operation emissions thresholds of significance are presented in **Table 3.4-2**.

Odor

While odors rarely cause any physical harm, they can be unpleasant and can lead to considerable distress among the public. Per the SMAQMD Rule 402, any project with the potential to frequently expose members of the public to objectionable odors is deemed to have a significant impact. Odor impacts on residential areas and other sensitive receptors, including hospitals, day-care centers, and schools, warrant the closest scrutiny.

TABLE 3.4-2
SMAQMD CRITERIA AIR POLLUTANT THRESHOLDS OF SIGNIFICANCE

Pollutants		Primary		Violation Criteria
		pounds/day	metric tons/year	
NOx	Construction	85	-	Not to exceed 85 pounds per day
	Operation	65	-	Not to exceed 65 pounds per day
ROG	Construction	-	-	-
	Operation	65	-	Not to exceed 65 pounds per day
GHG as CO_2e	Construction	-	1,100	Not to exceed 1,100 tons per year
	Operation	-	1,100	Not to exceed 1,100 tons per year

Because offensive odors rarely cause any physical harm and no requirements for their control are included in state or federal air quality regulations, local air districts often have no numerical rules or standards related to odor emissions, other than regulations related to nuisances.

Global Climate Change

Federal

CEQ GHG Guidance

Climate change is a global phenomenon attributable to the sum of all human activities and natural processes.

In 1997, CEQ circulated an internal draft memorandum (CEQ, 1997) on how global climate change should be treated for the purposes of the National Environmental Policy Act (NEPA). The CEQ draft memorandum advised federal lead agencies to consider how proposed actions subject to NEPA would affect sources and sinks of GHGs. During the same year, CEQ released guidance on the assessment of cumulative effects in NEPA documents (CEQ, 1997). Consistent with the CEQ draft memorandum, climate change impacts were offered as one example of a cumulative effect.

The following are the most recent regulatory actions taken by the USEPA:

- On July 23, 2009, USEPA published a final "rule which proposes to establish the criteria for including sources or sites in a Registry of Recoverable Waste Energy Sources (Registry)," as required by the Energy Independence and Security Act of 2007. Waste energy can be used to produce clean electricity. The clean electricity produced by waste energy would reduce the need

for non-renewable forms of electricity production, thus reducing greenhouse gas (GHG) emissions.

- On September 15, 2009, USEPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) proposed a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the United States. USEPA proposed the first national GHG emissions standards under the CAA, and NHTSA proposed an increase in the Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act.

- In February 2010, the CEQ Chair released a memorandum titled *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. The memorandum provides guidance on how project-related GHG emission should be analyzed in NEPA documents. The Draft Guidance provides that a NEPA climate change analysis shall provide quantification and mitigation to reduce GHG emissions. The guidance also provides that 25,000 metric tons of GHG emissions per year may be a helpful guideline to assist lead agencies in making informed decisions on climate change impacts resulting from a project subject to NEPA. On December 24, 2014, the CEQ published a Revised Draft *Guidance on Consideration of GHG Emissions and the Effects of Climate Change in NEPA Reviews* in the Federal Register. The revised draft was published in the Federal Register on December 24, 2014 and provided no significant changes with regards to methodology and significance criteria over the original draft.

Selected Federal Actions and Decisions Regarding GHG Regulation

Federal court decisions have discussed USEPA's authority to regulate GHGs from mobile and stationary sources. For example, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court held that Title II of the Clean Air Act authorized the USEPA to regulate GHGs from new motor vehicles if USEPA "form[ed] a 'judgment' that such emissions contribute to climate change." USEPA made this finding, commonly known as the Endangerment Finding, in 2009, denominating as a "single air pollutant" a combination of six GHGs that it identified as "the root cause of human-induced climate change." 74 Fed. Reg. 66523, 66537 (Dec. 15, 2009). In 2010, USEPA issued its "final decision," commonly known as the Triggering Rule, which concluded that motor-vehicle GHG emissions standards would require USEPA to regulate GHG emissions from stationary sources. 75 Fed. Reg. 17004 (April 2, 2010). Recently, the Supreme Court held that GHG emissions alone cannot trigger stationary source permitting requirements under the Clean Air Act's Prevention of Significant Deterioration ("PSD") or Title V programs, but that a source already subject to the PSD program because of its emissions of conventional pollutants may be required to limit GHG emissions through the use of "best available control technology." *Utility Air Regulatory Group v. EPA*, 134 S. Ct. 2427 (2014).

State

The California Air Resources Board (CARB), a part of the California EPA, is responsible for the coordination and administration of both federal and State air pollution control programs within California. In this capacity, CARB conducts research, sets California ambient air quality standards (CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, as well as consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's SIP, for which it works closely with the Air Quality Management District's (AQMDs) and the USEPA.

California Clean Air Act (CCAA)

The California Clean Air Act (CCAA) of 1988 requires non-attainment areas to achieve and maintain the CAAQS by the earliest practicable date, as well as requires local air districts to develop plans for attaining the State O_3, CO, sulfur dioxide, and NOx standards.

California has been a leader among the states in outlining and aggressively implementing a comprehensive climate change strategy that is designed to result in a substantial reduction in total statewide GHG emissions in the future. California's climate change strategy is multifaceted and involves a number of State agencies implementing a variety of State laws and policies. California laws and policies summarized below would assist in reducing GHG emissions from patrons of the Proposed Project.

Assembly Bill 1493

Signed by the Governor in 2002, Assembly Bill (AB) 1493 requires that the CARB adopt regulations requiring a reduction in GHG emissions emitted by cars in the state. The USEPA granted California's waiver request enabling the State to enforce its GHG emissions standards for new motor vehicles. With the granting of the waiver on June 30, 2009, it is expected that the regulations will reduce GHG emissions from California passenger vehicles by about 22 percent in 2012 and about 30 percent in 2016 (CARB, 2009).

Executive Order S-3-05

Executive Order (EO) S-3-05 was signed by the Governor on June 1, 2005. EO S-3-05 established the following statewide emission reduction targets:

- Reduce GHG emissions to 2000 levels by 2010;
- Reduce GHG emissions to 1990 levels by 2020; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

EO S-3-05 created a "Climate Action Team" or "CAT" headed by the California Environmental Protection Agency (CEPA) and including several other State jurisdictional agencies. The CAT is tasked by EO S-3-05 with outlining the effects of climate change on California and recommending an adaptation plan. The CAT is also tasked with creating a strategy to meet the target emission reductions. In April 2006, the CAT published an initial report that accomplished these two tasks.

Assembly Bill 32 (AB 32)

Signed by the Governor on September 27, 2006, AB 32 codifies a key requirement of EO S-3-05: the requirement to reduce Statewide GHG emissions to 1990 levels by 2020. AB 32 tasks CARB with monitoring State sources of GHGs and designing emission reduction measures to comply with the law's emission reduction requirements. However, AB 32 also continues the CAT's efforts to meet the requirements of EO S-3-05 and states that the CAT should coordinate overall state climate policy. In order to accelerate the implementation of emission reduction strategies, AB 32 requires that CARB identify a list of discrete early action measures that can be implemented relatively quickly. In October 2007, CARB published a list of early action measures that could be implemented and would serve to meet about a quarter of the required 2020 emissions reductions (CARB, 2006). In order to assist CARB in identifying early action measures, the CAT published a report in April 2007 that updated their 2006 report and identified strategies for reducing GHG emissions (CAT, 2007). In the October 2007 report, CARB cited the CAT strategies and other existing strategies that may be utilized in achieving the remainder of the emissions reductions. AB 32 required that CARB prepare a comprehensive "scoping plan" that identifies all strategies necessary to fully achieve the required 2020 emissions reductions. CARB provided its first update to the Climate Change Scoping Plan in May 2014. CARB provided an update to the December 2008 Scoping Report in November 2009. The update provided additional reduction strategies and an overview of methods to further reduce GHG emissions in California; however, no definitive numerical GHG emissions threshold was provided.

Executive Order S-01-07

EO S-01-07 was signed by the Governor on January 18, 2007. It mandates a statewide goal to reduce the carbon intensity of transportation fuels by at least 10 percent by 2020. This target reduction was identified by CARB as one of the AB 32 early action measures identified in their October 2007 report.

Senate Bill 375

SB 375 was approved by the Governor on September 30, 2008. SB 375 provides for the creation of a new regional planning document called a "sustainable communities strategy" (SCS). An SCS is a blueprint for regional transportation infrastructure and development that is designed to reduce GHG emission from cars and light trucks to target levels that will be set by CARB for 18 regions throughout California. Each of the various metropolitan planning organizations and the Sacramento Area Council of Governments (SACOG) must prepare an SCS and include it in that region's regional transportation plan. The SCS would influence transportation, housing, and land use planning. CARB will determine whether

the SCS will achieve the region's GHG emissions reduction goals. Under SB 375 certain qualifying in-fill residential and mixed-use projects would be eligible for streamlined CEQA review.

3.4.2 EXISTING AIR QUALITY

Regional Meteorology

The Twin Cities site and the EIS alternative sites (the Historic Rancheria site and the Elk Grove Mall site) are located within the southern portion of the Sacramento Valley Air Basin (SVAB). The geographic features giving shape to the Sacramento Valley are the Coast Range to the west, the Sierra Nevada mountain range to the east, and the Cascade Range to the north. These mountain ranges channel winds through the Sacramento Valley, but also inhibit dispersion of pollutant emissions. The Sacramento Valley is subject to two main seasonal wind patterns. The spring, summer, and fall wind pattern consists of winds that originate from the Pacific Ocean and flow through a sea-level gap in the Coast Range. In the winter season, northerly winds predominate.

Regional Air Quality

Sources of Emissions

Emissions are estimated and documented through the combined effort of the SMAQMD and CARB. **Table 3.4-3** summarizes estimated 2015 emissions of CAPs from major categories of air pollutant sources (CARB, 2014). For each pollutant, estimated emissions are presented for Sacramento County. The dominance of the Sacramento urban area is readily apparent with 80 percent of CO being emitted by mobile sources.

TABLE 3.4-3
SACRAMENTO COUNTY 2015 EMISSIONS ESTIMATES

Sources	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
	tons per day					
Total fuel combustion	0.3	4.6	3.7	0.1	0.4	0.4
Total waste disposal	1.0	0.1	0.1	0.0	0.0	0.0
Total cleaning and surface coatings	5.6	-	-	-	-	-
Total petroleum production and marketing	3.0	0.0	0.0	-	-	-
Total industrial processes	1.0	0.2	0.2	0.0	0.9	0.5
Total solvent evaporation	14.1	-	-	-	0.0	0.00
Total miscellaneous processes	8.3	38.8	3.7	0.3	23.8	7.6
Total mobile sources	19.8	175.8	37.0	0.4	3.2	1.8
Grand total for Sacramento County	**53.1**	**219.5**	**44.7**	**0.8**	**28.3**	**10.3**

Source: CARB, 2014

NAAQS Designations

Air pollutants of concern for an air basin include CAPs that are currently listed as having a nonattainment or maintenance status according to the applicable NAAQS and violation criteria. As shown in **Table 3.4-4**, the USEPA has designated the SVAB as severe nonattainment for the NAAQS one- and eight-hour O_3 and nonattainment for PM2.5 in accordance with the CAA. The applicable SIP for ozone in the SVAB is the 2009 Sacramento Regional 8-Hour Attainment and Reasonable Further Progress Plan. The SVAB meets the NAAQS or is unclassified for all other pollutants. Therefore, O_3 and $PM_{2.5}$ are considered air pollutants of concern in the SVAB, and, accordingly, the area surrounding the Proposed Project and Alternative sites.

TABLE 3.4-4
SVAB FEDERAL ATTAINMENT STATUS

Pollutant	NAAQS
Ozone	Nonattainment (8-hour Severe-15)
PM_{10}	Attainment
$PM_{2.5}$	Nonattainment
CO	Attainment
NO_2	Unclassified/Attainment
SO_2	Attainment Pending[1]
Pb	Unclassified/Attainment

[1] Cannot be classified
Source: Sacramento Municipal Air Quality Management District, 2014.

Ozone

Photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_X) resulting from the incomplete combustion of fossil fuels are the largest source of ground-level O_3. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, O_3 is primarily a summer air pollution problem. As a photochemical pollutant, O_3 is formed only during daylight hours under appropriate conditions, but is destroyed throughout the day and night. O_3 is considered a regional pollutant, as the reactions forming it take place over time and are often most noticeable downwind from the sources of the emissions.

Particulate Matter 2.5

Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, also known as $PM_{2.5}$, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). The size of particles is directly linked to their potential for causing health problems. Particles smaller than 2.5 µm pose the greatest problems, because they can be inhaled deep into the lungs. Exposure to such particles can affect respiratory system function. Particulate matter can also be a cause

of Valley Fever, caused by a fungus (*Coccidioides*) that lives in soil and dirt in certain areas and causes flu-like symptoms. Valley Fever occurs at a moderate incidence rate in Sacramento County (CDPH, 2013).

Hazardous Air Pollutants (HAPs)

In the vicinity of the Twin Cities site, HAPS are primarily emitted by mobile sources, such as diesel trucks and airplanes. Other sources of HAP emissions in the region include bulk gasoline distributers, dry cleaners, and paint stripping and miscellaneous surface coating operations.

Carbon Monoxide

CO is not readily dispersed throughout the atmosphere; therefore, it is considered a localized air quality issue, close to the emission source. CO emissions generally cause acute (short-term) health threat. Although the SVAB is classified by the USEPA as being in attainment for the NAAQS, CO is a pollutant of concern at major signalized intersections (greater than 100,000 vehicles per day) that exhibit prolonged vehicle idling times.

Diesel Particulate Matter

An additional pollutant of concern in the region is DPM. DPM is not defined by the USEPA as a HAP; however, its components are defined as HAPs. According to CARB, the estimated health risk from HAPs can be primarily attributed to relatively few compounds, including DPM. DPM differs from other HAPs in that it is not a single substance but a complex mixture of air HAPs, composed of gaseous and solid material from the combustion of diesel fuels. The visible emissions in diesel exhaust include PM and carbon particles or "soot." Due to the controversy surrounding DPM, an assessment of the potential impacts of DPM releases associated with the Proposed Project has been included in **Section 4.4**.

Odor

Types of operations that are typically evaluated for odor concerns include waste processing and heavy industrial facilities such as wastewater treatment plants (WWTPs), landfills and composting facilities, chemical manufacturing, and confined animal facilities.

The City of Galt WWTP, located approximately 3,000 feet west from the Twin Cities site, and a cattle feed lot operation to the north of the Twin Cities are the only documented sources of odor surrounding any EIS alternative site.

The Twin Cities, Historic Rancheria, and Mall sites do not include any source types that have historically been associated with odor.

Sensitive Receptors

Sensitive receptors are facilities that house or attract children, the elderly, and people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.

Twin Cities Site - Alternatives A, B, and C

The nearest off-site residential sensitive receptor to the Twin Cities site is a grouping of residences located on Twin Cities Road approximately 4,000 feet south of the proposed development area on the Twin Cities site. The nearest school to the Twin Cities site is the Lake Canyon Elementary School located approximately 1.6 miles southeast on Lake Canyon Avenue. The nearest medical facility is Lodi Health Physicians Galt Family and Specialty Care, located approximately 3.2 miles south of the site.

Historic Rancheria Site - Alternatives D and E

The nearest residential sensitive receptors to the Historic Rancheria site are residences located to the immediate east and west of the site (550 feet and 600 feet, respectively). The nearest school to the Historic Rancheria site is the Dillard Elementary School located approximately 0.8 mile southeast of the site. The nearest hospital is the Methodist Hospital of Sacramento located approximately 11.2 miles northwest of the Historic Rancheria site in the City of Elk Grove.

Elk Grove Mall Site - Alternatives F

The nearest residential sensitive receptors to the Mall site are two residences located approximately 0.5 mile south of the Mall site along West Stockton Boulevard. The nearest schools to the Mall site are the Florence Markofer Elementary School and Elk Grove High School located approximately 1.2 mile north of the Mall site. The nearest hospital is the Methodist Hospital of Sacramento located approximately 6.1 miles north of the Mall site.

Climate Change

Primary sources of GHG emissions in Sacramento County are transportation, electricity generation facilities, industrial processes, and commercial, residential and agricultural land uses; however, there are many other sources of direct and indirect GHG emissions in the County.

According to the United Nations Intergovernmental Panel on Climate Change (IPCC) and the USEPA, it is very likely [more than 90% probability] that human activity is responsible for rising temperatures. The IPCC expects global temperatures to increase another 2 to 10 degrees Fahrenheit by 2100, depending on how much atmospheric GHG concentrations continue to rise. It is anticipated that this general warming trend will be accompanied by an increase in the frequency of drought and extreme hot days in summer, increase in the frequency and intensity of storms and wild fires, and loss of snow pack in the Sierra Nevada Mountains.

3.5 BIOLOGICAL RESOURCES

This section describes the existing environmental conditions for the Twin Cities site, Historic Rancheria site, and City of Elk Grove Mall site (Mall site). The general and site-specific profiles of biological resources contained herein provide the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.5**.

3.5.1 REGULATORY SETTING

Waters of the U.S.

Any person, firm, or agency planning to alter or work in navigable waters of the U.S., including the discharge of dredged or fill material, must first obtain authorization from the U.S. Army Corps of Engineers (USACE). Additionally, to comply with Executive Order 11990, agencies are responsible for minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. Section 10 of the Rivers and Harbors Act of 1899 prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from the USACE (33 U.S.C. 403). Section 301 of the Federal Water Pollution Control Act (FWPCA) and Amendments of 1972 prohibits the discharge of pollutants, including dredged or fill material, into waters of the U.S. without a Section 404 permit from the USACE (33 U.S.C. 1344). A Section 401 Water Quality Certification may be required by the Environmental Protection Agency (EPA) for trust lands before other permits are issued.

Waters of the U.S. are defined as:

> All waters used in interstate or foreign commerce; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent and ephemeral streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters (Section 404 of the FWPCA; 33 CFR Part 328).

Wetlands are defined as:

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Federal Register, 1980, 1982; Braddock and Huppman, 1995).

The USACE and the EPA issued the USACE Jurisdictional Determination Form Instructional Guidebook on May 30, 2007, to provide guidance based on the Supreme Court's decision regarding Rapanos v. United States and Carabell v. United States (Rapanos Guidance) (USACE, 2007). The decision provides new standards that distinguish between traditional navigable waters (TNWs), relatively permanent waters (RPWs), and non-relatively permanent waters (non-RPWs). Wetlands adjacent to non-RPWs are subject to the Clean Water Act (CWA) jurisdiction if: the water body is relatively permanent, if a water body abuts a RPW, or if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs. The significant nexus standard will be based on evidence applicable to ecology, hydrology, and the influence of the water on the "chemical, physical, and biological integrity of downstream traditional navigable waters" (USACE, 2007). Isolated wetlands are not subject to the FWPCA jurisdiction based on the Supreme Court's decision regarding Solid Waste Agency of Northern Cook County (SWANCC) (Guzy, 2001).

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) enforces the provisions of the Federal Endangered Species Act (FESA) for all terrestrial species. Section 9 (§1538) prohibits the "taking" of a listed species by anyone, including private individuals and state and local agencies. Threatened and endangered species on the federal list (50 CFR Sections 17.11 and 17.12) are protected from take, defined as direct or indirect harm. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need for consultation under Section 7 of the FESA for federal agencies, including Tribes. A Section 7 Biological Opinion with incidental take provisions would be rendered.

Pursuant to the requirements of the FESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed species may be present on the proposed project site and whether the proposed project will have a potentially significant impact upon such species. A discussion of regionally-listed species is provided in consideration of potential impacts associated with project implementation. Under the FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is proposed for listing under the FESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 U.S. Code (U.S.C.) Section 1536[3], [4]). Therefore, project-related impacts to these species, or their habitats, would be considered significant and require mitigation.

Migratory Bird Treaty Act

Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 Code of Federal Regulations (CFR) 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest

abandonment, nestling abandonment, or forced fledging would be considered take under federal law. As such, project-related disturbances must be reduced or eliminated during the nesting season. The general nesting season extends from February 15 to September 15.

3.5.2 TWIN CITIES SITE ENVIRONMENTAL SETTING

The 282-acre Twin Cities site is located 0.2 miles north of the City of Galt, in unincorporated Sacramento County, California. The Twin Cities site is currently developed with agricultural operations and two residential units. The remainder of the site is undeveloped grassland. Laguna Creek, which defines the northern boundary of the site, is partially channelized in a culvert over which an internal dirt road provides access between the site and the adjacent property to the north. The Galt Swainson's Hawk Preserve, operated by the City of Galt, lies immediately adjacent to the western edge of the project site. Additionally, the Wildlands Twin Cities Wetlands Preserve, operated by Wildlands, Inc., lies adjacent to the northwestern edge of the site.

Methodology

Prior to conducting the biological surveys on the Twin Cities site, the following biological information was obtained and reviewed:

- USFWS list, dated September 18, 2011, updated January 7, 2014 and again February 27, 2015, of federally-listed species with the potential to occur on or be affected by projects on the Galt U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (quad) (USFWS, 2013a);
- California Native Plant Society (CNPS) query, dated January 7, 2014, of state and federally-listed special-status plant species known to occur on the Galt quad and surrounding quads within a 5-mile radius of the Twin Cities site (these surrounding quads include: Elk Grove, Bruceville, Clay, Thornton, Lodi North, and Lockeford (CNPS, 2014);
- California Natural Diversity Database (CNDDB) query, dated January 7, 2014, of state and federally-listed special-status species known to occur on the Galt quad and those surrounding quads found in a 5-mile radius of the Twin Cities site (California Department of Fish and Wildlife [CDFW], 2014);
- CNDDB map of state and federally-listed special-status species known to occur within five miles of the Twin Cities site (CDFW, 2014);
- USFWS National Wetlands Inventory (NWI) map of wetland features in the vicinity of the Twin Cities site (USFWS, 2013b).

Biological Surveys

A general biological survey and focused botanical survey of the 282-acre Twin Cities site were conducted on July 15, 2013 with additional biological and botanical surveys performed on August 6, 2013, April 7, 2014, and August 15, 2014. The focused botanical surveys included floristic inventories of the site. The general biological surveys consisted of evaluating biological communities and documenting potential

habitat for special-status species with the potential to occur on the site. The terrestrial and aquatic habitat types were classified using the *Manual of California Vegetation, Second Edition* (MCV; Sawyer et al, 2009) and the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979) and were modified based on existing habitat conditions within the site. Lists of plant and wildlife species observed within the site are provided in the Biological Assessment included as **Appendix L**.

Analysis

The USFWS, CNDDB, and CNPS lists of regionally occurring special-status species are also included for reference purposes within **Appendix L**. An analysis to determine which of these special-status species have the potential to occur within the Twin Cities site was conducted. The habitat requirements for each regionally occurring special-status species were assessed and compared to the type and quality of habitats observed onsite during the biological surveys. Several regionally occurring special-status species were eliminated due to lack of suitable habitat, elevation range, lack of suitable substrate/soils, and/or geographic distribution. Species determined to have no potential to occur on-site are not discussed further.

Terrestrial Habitat Types

Terrestrial habitat types on the Twin Cities site include: agriculture, nonnative grassland, riparian, and ruderal/developed areas. Dominant vegetation in each vegetative community is discussed below.

A habitat map of the Twin Cities site is illustrated in **Figure 3.5-1**. Acreages for each of the habitat types are provided on the habitat map and within **Table 3.5-1**. Photographs of the community types within the Twin Cities site are illustrated in **Figure 3.5-2a** and **Figure 3.5-2b**.

TABLE 3.5-1
SUMMARY OF TERRESTRIAL HABITATS ON THE TWIN CITIES SITE

Habitat Type	Acres
Agriculture	221.35
Nonnative Grassland	43.20
Ruderal/Developed	13.21
Riparian	2.97
Source: **Appendix L** – Biological Assessment	

Nonnative Grassland

Nonnative grassland occurs within the southeastern portion of the Twin Cities site. Dominant vegetation includes: wild oat (*Avena fatua*), slender oat (*Avena barbata*), barley (*Hordeum murinum*), rat-tail vulpia (*Festuca myuros*), soft brome (*Bromus hordeaceus*), filaree (*Erodium botrys*), filaree (*Erodium cicutarium*), ripgut grass (*Bromus diandrus*), bur clover (*Medicago polymorpha*), hairgrass (*Aira caryophyllea*), yellow star thistle (*Centaurea solstitialis*), milk thistle (*Silybum marianum*), field mustard

SOURCE: JRN Civil Engineers, 9/3/2013; Microsoft aerial photograph, 2/2/2012; AES, 2014

Figure 3.5-1

Habitat Types within the Twin Cities Site

PHOTO 1: View northward of agriculture from the southwestern boundary of the site.

PHOTO 2: View eastward of nonnative grassland. Photograph taken from the south-central portion of the site.

PHOTO 3: View southward of nonnative grassland to the east, ruderal/developed areas in the center, and agricultural to the west. Photograph taken from the central portion of the site.

PHOTO 4: View eastward of Drainage 3 and surrounding riparian habitat located within south-central portion of the site.

PHOTO 5: View northwestward of 1.79-acre pond and riparian habitat located within the southwestern portion of the site.

SOURCE: AES, 2014

Figure 3.5-2a
Photographs of the Twin Cities Site

PHOTO 6: View westward of Drainage 2. Photograph taken from the northeastern portion of the site.

PHOTO 8: Existing agricultural well located near Drainage 2.

PHOTO 7: View westward of Drainage 2 located along the northwestern portion of the site.

PHOTO 9: View eastward of Laguna Creek (Drainage 1) and riparian habitat. Photograph taken from the northeastern boundary of the site.

SOURCE: AES, 2014

Figure 3.5-2b
Photographs of the Twin Cities Site

(*Brassica rapa*), English plantain (*Plantago lanceolata*), and mouse-hair chickweed (*Cerastium glomeratum*).

Riparian

Riparian habitat occurs within two portions of the Twin Cities site: along the banks of Laguna Creek and within the wetland/pond within the southern portion of the Twin Cities site. Dominant vegetation along Laguna Creek, the pond, and the wetland includes: Oregon ash (*Fraxinus latifolia*), broad-leaf cattail (*Typha latifolia*), tule (*Bolboschoenus* sp.), creeping spikerush (*Eleocharis macrostachya*), red willow (*Salix laevigata*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*), marsh seedbox (*Ludwigia palustrus*), and fennel (*Foeniculum vulgare*). Single plum trees (*Prunus* sp.) occur on the sides of the channelized drainage, with slender willows (*Salix exigua*) prevalent towards the western edge of the drainage. A patch of native forbs, represented by Ithuriel's spears (*Triteleia laxa*) and fiddleneck (*Amsinskia menziesii)* also occur in one location on the bank of the wetland drainage. Noxious weeds which were identified to occur along the wetland drainage include broad-leaved peppergrass (*Lepidium latifolium*).

Ruderal/Developed Areas

Ruderal/developed areas include graded roads throughout the Twin Cities site and two residential dwellings and associated outbuildings within the southeastern portion of the Twin Cities site. Dominant Plant species interspersed throughout the ruderal/developed areas include: hairy geranium (*Geranium molle*), bristly ox tongue (*Helminthotheca echioides*), milk thistle, wild oat, yellow star thistle, fennel, and peppergrass (*Lepidium nitidum*).

Agriculture

Agricultural fields are located throughout the northern, eastern, and southeastern portions of the Twin Cities site. Cultivated alfalfa (*Medicago sativa*) and corn (*Zea mays*) were growing at the time of the biological surveys.

Potential Waters of the U.S.

During the site assessments conducted on July 15, August 6, 2013, and April 7 and August 15, 2014, the Twin Cities site was informally assessed for wetlands and waterways. Any water features found were assessed for their potential to be regulated under the CWA (waters of the U.S.). Four aquatic habitat types were identified within the Twin Cities site during the wetland/waters assessment:

1) Drainage 1: Laguna Creek, which runs along the northern boundary of the site
2) Drainage 2: a man-made agricultural ditch that is very unlikely to be a jurisdictional water

3) Drainage 3: an un-named partially channelized ephemeral drainage which deepens and broadens into a wetland feature
4) Wetland/Pond: a 1.79-acre wetland/pond near the western border of the site to which Drainage 3 flows

A habitat map that shows these features is presented in **Figure 3.5-1**. Photographs of the aquatic habitats are shown in **Figure 3.5-2a** and **Figure 3.5-2b**.

Drainage 1: Laguna Creek

Laguna Creek flows under Hwy 99 and then proceeds east to west along the northern boundary of the Twin Cities site. Laguna Creek receives runoff from upstream properties, which are primarily irrigated agricultural fields to the east of Hwy 99, and treated effluent from the City of Galt Wastewater Treatment Plant (WWTP), located downstream of the Twin Cities site, before flowing into the Cosumnes River (City of Galt, 2012). Laguna Creek exhibits sloped banks and a diverse streambed morphology giving it a more natural appearance relative to other drainages on the property. Dominant species observed include: Oregon ash (*Fraxinus latifolia*), broad-leaf cattail (*Typha latifolia*), tule (*Bolboschoenus* sp.), creeping spikerush (*Eleocharis macrostachya*), red willow (*Salix laevigata*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*), and fennel (*Foeniculum vulgare*). Marsh seedbox (*Ludwigia palustrus*) and other *Ludwigia* spp. occur in the water. Herbaceous vegetation on the banks is represented mostly by weedy species, for instance, harding grass (*Phalaris aquatica*), and non-native forbs, including poison hemlock (*Conium maculatum*). Native species are represented by iris-leaved rush (*Juncus phaeoceohalus*) and tules (*Schoenoplectus acutus* var. *occidentalis*).

Drainage 2

This drainage is a modified ditch that passes through the north-central portion of the site. Drainage 2's banks are linear, well incised, and have a very low gradient. The primary flow within the manmade agriculture ditch appears to be correlated with agriculture irrigation activities, with minimal offsite stormwater pass-through flow. The ditch does not appear to connect to any drainages on the east side of Hwy 99; only man made road side ditches. Crops on the site are currently flood irrigated and drain back to Drainage 2, and then some of the tailwater is again used for irrigation. This drainage has been maintained with periodic dredging. Currently, the predominant vegetation is broad-leafed cattail, with scattered willow (*Salix* sp.) and non-native blackberry.

Drainage 3

This drainage is partially natural in appearance and includes stretches that have been channelized to facilitate water movement. The straight segment extending west from the eastern border of the site is been channelized, but most of the remainder of Drainage 3 follows a natural path. Several culverts convey off-site stormwater flows originating from the east under Hwy 99 on to the Twin Cities site to Drainage 3. The banks of the channelized segments of Drainage 3 are linear, well incised, and have a

very low gradient. One elderberry shrub occurs within Drainage 3 to the south of the development area (**Figure 3.5-1**).

Wetland/Pond

Wetland vegetation surrounds the stock pond that occurs on the southwestern portion of the Twin Cities site. In most years it remains wetted year-round due to summer irrigation and winter stormwater. Dominant aquatic and shoreline vegetation includes red willow, sandbar willow (*Salix exigua*), curly dock, Himalayan blackberry, tall flatsedge (*Cyperus eragrostis*), ryegrass, Fremont cottonwood (*Populus fremonti*), and broad-leafed cattail. Cattail stalks surround much of the perimeter of the pond, but the interior is relatively clear and provides habitat for waterfowl. Willows provide some shade, mostly to the perimeter of the pond. It is anticipated that at lower levels of water, much of the currently wetted area within the pond would fill in with similar vegetation. Reptiles, amphibians, and invertebrates may be supported by this ecosystem. However, due to the potential for the pond to dry during periods of reduced irrigation, fish would not be supported naturally. The pond is fed by Drainage 3, which has been modified to enable temporary annual irrigation associated with the agricultural field to the north of the pond. This pond drains off-site (west) to an ephemeral drainage adjacent to the railroad tracks bordering the Twin Cities site.

Wildlife

Wildlife observed within the Twin Cities site includes ground squirrel (*Spermophilus columbianus*), black-tailed jackrabbit (*Lepus californicus*), white-tailed kite (*Elanus leucurus*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensi*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), American crow (*Corvus brachyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), western meadowlark (*Sturnella neglecta*), and Northern mockingbird (*Mimus polyglottos*).

Federally-Listed Species

Federally-listed species include those plant and animal species that are listed as endangered or threatened under the FESA, or formally proposed for listing. The Twin Cities site does not provide habitat for any federally-listed plants and no federally-listed plants were identified on site during the site visits and database searches.

The Twin Cities site may have potential habitat for one federally-listed reptile, one federally-listed amphibian, and three federally-listed insect species as listed and discussed in detail below:

- Giant Garter Snake (GGS, *Thamnophis gigas*),
- California Tiger Salamander (CTS, *Ambystoma californiense*),
- Valley Elderberry Longhorn Beetle (VELB, *Desmocerus californicus dimorphus*)

- Vernal Pool Fairy Shrimp (VPFS, *Branchinecta lynchi*), and
- Vernal Pool Tadpole Shrimp (VPTS, *Lepidurus packardi*).

Giant Garter Snake (Thamnophis gigas; GGS)

Federal Status – Threatened
State Status – Threatened

Habitat requirements for the GGS consist of: (1) adequate water during the snake's active season (May - September) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter (California Herps, 2013). GGS is highly aquatic and is active during the day and at night in hot weather.

GGS typically inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout its winter dormancy period. GGS typically select burrows with sunny exposure along south and west facing slopes. The breeding season extends through March and April, and females give birth to live young from late July through early September.

There are three CNDDB records for GGS within five miles of the Twin Cities site. The nearest record (CNDDB occurrence number 78) is from 2008 and is approximately 0.6 miles north of the site. The record states that GGS were captured within a marsh comprised of bulrush, nutsedge, cattail, marsh seedbox, cottonwood, and willow at the confluence of Willow and Badger creeks just west of Highway 99 at Arno Road.

Laguna Creek, Drainage 3, the 1.79-acre wetland/pond, on the Twin Cities site may provide potential habitat for GGS. Upland habitat near these water features may also contain suitable aestivation habitat for GGS. This species has the potential to occur within the Twin Cities site.

California Tiger Salamander (Ambystoma californiense; CTS)

Federal Status – Threatened
State Status – Threatened

Habitat requirements for the CTS consist of vernal pools or temporary ponds which are used as breeding sites and are located in relatively close proximity to small mammal burrows or other subterranean crevices used for winter aestivation. This species is also found in grassland, oak savannah, along the edges of mixed woodland, and in lower elevation coniferous forest. CTS are active especially after rain events which cue migration to breeding pools. CTS are primarily nocturnal and adults may be observed November through February. Larvae hatch and emerge from pools in March through May.

There is one CNDDB occurrence documented within the 5-mile radius surrounding the Twin Cities site (Occurrence Number: 415). The Twin Cities site is located approximately 8 miles west of the nearest CTS Critical Habitat as described under the South Sacramento Draft Habitat Conservation Plan (Sacramento County, 2013). No other occurrences or breeding sites are documented within five miles. CTS is very unlikely to occur on the Twin Cities site; however, limited potential habitat exists.

Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus; VELB)

Federal Status – Threatened
State Status – None

VELB is only found in close association with its host plant, elderberry (*Sambucus* spp.). Elderberry plants are found in or near riparian and oak woodland habitats. VELB's life history is assumed to follow a sequence of events similar to those of related taxa. Female beetles deposit eggs in crevices in the bark of living elderberry plants. Presumably, the eggs hatch shortly after they are laid, and the larvae bore into the pith of the trunk or stem. When larvae are ready to pupate, they move through the pith of the plant, open an emergence hole through the bark, and then return to the pith for pupation. Adults exit through the emergence holes and can sometimes be found on elderberry foliage, flowers, or stems or on adjacent vegetation. The entire life cycle of the VELB encompasses approximately two years, from the time eggs are laid and hatch until adults emerge and die (USFWS, 1994). The presence of exit holes in elderberry stems indicates previous VELB habitat use.

One elderberry shrub occurs adjacent to Drainage 3 (**Figure 3.5-1**). No exit holes were identified in this elderberry shrub. There is one documented occurrence of this species within a 5-mile CNDDB radius of the Twin Cities site (Occurrence number: 162). This record is from 1984, is presumed extant, and consisted of an observation of bore holes, but no adults were seen. The observation was near a creek approximately 4.5 miles southeast of the site. This species has the potential to occur within the Twin Cities site.

Vernal Pool Fairy Shrimp (Branchinecta lynchi; VPFS)

Federal Status – Threatened
State Status – None

VPFS inhabit vernal pools of the Central Valley and Coast Ranges. VPFS are found most commonly in small swales, earth slumps, ditches, or basalt-flow depression basins with grassy or muddy bottoms, in unplowed soils, and occasionally in clear depressions less than one meter in diameter in sandstone outcrops surrounded by foothill grasslands. VPFS occur in waters between 4.5˚C and 23°C, with low to moderate total dissolved solids (48 to 481 parts per million (ppm)), and a pH between 6.3 and 8.5 (Syrdahl, 1993; Eriksen and Belk, 1999). When the vernal pools fill with rainwater, VPFS hatch from eggs (shell-covered, dormant embryos) present in the soil from previous years of breeding. Eggs

normally hatch when water less than 10°C fills vernal pools. VPFS reach maturity in approximately 18 days under conditions when daytime temperatures reach 20°C, but 41 days are more typical if water remains near 15°C (Gallagher, 1996; Helm, 1998).
There are five CNDDB records for VPFS within five miles of the site (Occurrence numbers: 89, 128, 160, 341, and 364). The closest occurrence (number 89) is located approximately 0.75 miles north of the Twin Cities site. Habitat when this occurrence was documented consisted of disked or fallow pastureland within non-native annual grassland. This population of over 1,000 VPFS individuals was last seen in 2002 in an area once proposed for development. The occurrence is now within the Cosumnes River State Ecological Reserve. The closest known occurrence drains away from the site.

VPFS have the potential to occur within the 1.79-acre pond and Drainage 3; however, VPFS is very unlikely to occur in Drainage 2.

Vernal Pool Tadpole Shrimp (Lepidurus packardi; VPTS)

Federal Status – Endangered
State Status – None

Adult VPTS are much larger in body mass than adult VPFS and may reach lengths of 1.5 inches. Unlike VPFS, VPTS are able to produce more than one generation in a single wet season. Rapid sexual maturity (in as little as three weeks) enables the VPTS to hatch, mature, and produce numerous drought-resistant eggs quickly after rainwater fills the vernal pools. VPTS are found primarily in a variety of natural and artificial seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities.

There are five CNDDB records for VPTS within five miles of the Twin Cities site (occurrence numbers: 28, 34, 86, 115, and 209). The nearest record is from 1991 and is mapped approximately 0.75 miles north of the Twin Cities site (CNDDB occurrence number: 209). The record states that eight VPTS were collected from unspecified habitat in this location.

VPTS have the potential to occur within the 1.79-acre pond and Drainage 3; however, VPFS is very unlikely to occur in Drainage 2.

Migratory Birds and Other Birds of Prey

Migratory birds and other birds of prey have the potential to nest within the riparian habitat and isolated eucalyptus trees located within the nonnative annual grassland. Birds, including white-tailed kite, Swainson's hawk, red-tailed hawk, and waterfowl were observed foraging within the Twin Cities site during the July 15, August 6, 2013 and April 7, 2014 biological surveys. No birds were observed nesting. The nesting season ranges from February 15 to September 15.

USFWS Critical Habitat

No USFWS critical habitat is located on the Twin Cities site. The nearest critical habitat designated by the USFWS is for the Delta smelt. This identified area is located approximately 6.6 miles west of the site. Critical habitat for steelhead is located in the Mokelumne River southwest of the Twin Cities site (USFWS, 2014).

State-Listed Species

Special-status species are formally listed by the state and/or recognized by state agencies, CNPS, or other local jurisdictions because of their rarity or vulnerability to habitat loss or population decline. These species generally receive no specific protection on lands taken into trust by the federal government; however, specific State-listed species are discussed herein based on consultation with cooperating agencies (County and Cities). Potentially occurring listed (threatened/endangered) special-status species, both federal and state, are identified in **Table 3.5-2**.

Surveys were conducted for special-status plants within the evident and identifiable bloom period for each species identified to potentially use habitat similar to that found onsite. No special-status plant species were observed during these target surveys. The Twin Cities site provides potential habitat for four state-listed special-status wildlife species: California tiger salamander (*Ambystoma californiense*), Swainson's hawk (*Buteo swainsoni*), greater sandhill crane (*Grus canadensis tabida*), and giant garter snake (*Thamnophis gigas*). The CTS and GGS are discussed above. The tricolored blackbird's (*Agelaius tricolor*) status as a state-listed endangered species recently expired on June 30, 2015, in accordance with the emergency status listing timeline. On June 11, 2015 the Fish and Game Commission (Commission) rejected a petition from the Center of Biological Diversity (CBD) that would make the blackbird a candidate under CESA. However, in October 8, 2015, the Commission accepted a revised petition from CBD and the Department's evaluation of the petition. The Commission will consider these materials at their December 2015 meeting, at which time they will vote to: 1) emergency list the blackbird as they did previously; 2) accept the petition and advance the species to candidacy; or 3) reject the petition. The tricolored blackbird will remain a species of special concern in the interim, but since its regulatory status is likely to change before the end of 2015, a discussion on its natural history and its potential to be impacted by the Proposed Project is included herein.

Potential impacts are discussed in **Section 4.5** and mitigation measures, if warranted, are recommended in **Section 5.5**.

Tricolored Blackbird (Agelaius tricolor; TRBL)

State Status – Species of Special Concern

The TRBL is largely found in the Central Valley, extending into the South Coast Range from Monterey County south, but populations are also documented from the Peninsular Range near San Diego County and extreme northern California. The TRBL forms the largest breeding colonies of any North American

TABLE 3.5-2
FEDERAL AND REGIONALLY OCCURRING SPECIAL-STATUS SPECIES THAT HAVE THE POTENTIAL TO OCCUR WITHIN THE TWIN CITIES SITE AND/OR THE IMMEDIATE VICINITY

Scientific Name Common Name	Federal/State/ CNPS Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur On-Site
Plants					
Gratiola heterosepala Boggs Lake hedge-hyssop	--/CE/1B.2	Known from Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, and Tehama counties in California and in Oregon (CNPS, 2013).	Annual herb found on clay soils in vernal pools and along the lake margins of marshes and swamps from 10 to 2,375 meters (CNPS, 2013).	April-August	This species has the potential to occur within the emergent wetland and pond. However, the July 15, 2013 and May 7, 2014 botanical surveys were conducted within the evident and identifiable blooming period for this species, and this species was not observed within the site. This species does not occur within the Twin Cities site.
Animals					
Invertebrates					
Branchinecta lynchi Vernal pool fairy shrimp	FT/--/--	Known from Alameda, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kings, Madera, Merced, Monterey, Napa, Placer, Riverside, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Ventura, Yolo, and Yuba counties in California and in southern Oregon (NatureServe, 2014).	Found commonly in a small swale earth slump or basalt-flow depression basin with grassy or muddy bottom in unplowed grassland from 10 to 290 meters in the Central Valley and up to 1,159 meters in the South Coast Mountains Region (Eriksen and Belk, 1999).	Wet season: December to May (adults) Dry season: June to November (cysts)	Wetland habitat present on the Twin Cities site provides potential habitat for this species. Unlikely to occur in Drainage 2.
Lepidurus packardi Vernal pool tadpole shrimp	FE/--/--	Known from Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kings, Merced, Placer, Fresno, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba counties (USFWS, 1994).	Found in a variety of natural and artificial, seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities. Wetland habitats vary in size from 2 square meters to 356,253 square	Wet season: November to April (adults) Dry season: May to October (cysts)	Wetland habitat present on the Twin Cities site provides potential habitat for this species. Unlikely to occur in Drainage 2.

Scientific Name Common Name	Federal/State/ CNPS Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur On-Site
			meters and vary in depth from 2 to 15 centimeters (Helm, 1998).		
Amphibians					
Ambystoma californiense California tiger salamander	FT/CT/--	Known discontinuously throughout central California including the Central Valley and surrounding foothills from southern Colusa County to Northwestern Kern County (NatureServe, 2014).	Found in grassland, oak savannah, edges of mixed woodland, and lower elevation coniferous forest. Breeds in temporary ponds that form during winter and may dry out in summer (Stebbins, 2003).	November through February (adults) March 15 through May15 (larvae)	This species has the potential to occur within the nonnative grassland area along Drainage 3 and the pond.
Reptiles					
Thamnophis gigas Giant garter snake	FT/CT/--	Known from Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Fresno, San Joaquin, Solano, Sutter, Yolo, and Yuba counties (Stebbins, 2003).	Found in agricultural wetlands, irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. Requires water during its active season (early spring through mid-fall) to provide food and cover, emergent, herbaceous wetland vegetation for foraging and cover, grassy banks and openings in waterside vegetation for basking, and higher elevation uplands for cover and refuge from flood waters during its dormant season (winter). Inhabits small mammal burrows and other soil crevices with sunny exposure along south and west facing slopes, above flood elevations when dormant.	March through September	This species has the potential to occur within the water features and grassland found on the north and south areas of the site. Unlikely to occur in Drainage 2 due to limited foraging and cover habitat, and year round agricultural activity on either side of this manmade agriculture ditch.
Birds					
Agelaius tricolor Tricolored blackbird	--/CSC/--	Restricted to the Central Valley and surrounding foothills, throughout coastal and some inland localities in southern California, and scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California.	Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water.	All Year	This species has the potential to occur within the tule and cattail beds found along Laguna Creek in the north and within the pond along the western edge of the site. Unlikely to nest in Drainage 2 due to the narrow drainage corridor, marginal habitat, and year round agricultural activity on either side of

Scientific Name Common Name	Federal/State/ CNPS Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur On-Site
					this manmade agriculture ditch.
Buteo swainsoni Swainson's hawk	--/CT/--	In California, breeds in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, Antelope Valley, and in eastern San Luis Obispo County (Polite, 2006).	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires suitable foraging surrounding the nest sites including grasslands, alfalfa, or grain fields supporting rodent populations (Polite, 2006).	March-October	The Twin Cities site provides foraging habitat for this species.
Grus Canadensis tabida Greater Sandhill crane	--/CT/--	Southwestern British Columbia south to northern California and northern Nevada, in the Rocky Mountain region from Montana to northern Colorado, in the central plains and Great Lakes region from southern Manitoba and northern Minnesota to central Wisconsin and southern Michigan, and also southeastern Ontario (NatureServe, 2014).	Nesting territories include wet meadows, marshes, and wetland habitats in the far northern portion of California. Foraging areas are typically agricultural fields near roosting sites	September - November	The Twin Cities site provides potential foraging habitat for this species.

STATUS CODES

FEDERAL: United States Fish and Wildlife Service (2014)
FE Federally Endangered
FT Federally Threatened
FC Federal Candidate for Listing

STATE: California Department of Fish and Wildlife (2014)
CE California Listed Endangered
CT California Listed Threatened
CR California Listed Rare
CSC California Species of Special Concern
CFP California Fully-Protected

CNPS: California Native Plant Society (2014)
List 1A Plants Presumed Extinct in California
List 1B Plants Rare, Threatened, or Endangered in California and Elsewhere
List 2 Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

land bird, with a primary breeding season extending from March through early August. They also exhibit an autumnal breeding season from early September through November. The largest TRBL breeding colonies are associated with freshwater emergent wetlands in rice growing communities. However, they are not tied to rice habitat, but areas with open accessible water, protected nesting vegetation, and adequate foraging habitat within a few kilometers of their breeding colony. Typical nesting substrate consists of tule, cattail, willow, and blackberry, although they have been observed utilizing other species as well. During the winter TRBL form large mixed-flock with other blackbird species wherein they forage on insects in agricultural fields and open grasslands.

There are 21 CNDDB records for TRBL within five miles of the Twin Cities site. The nearest dated record is from 1992 and is mapped immediately adjacent to the western edge of the Twin Cities site. TRBL have the potential to occur within the 1.79-acre pond and Drainages 1, 2, and 3. However, Drainage 2 represents marginal habitat; as such, TRBL is unlikely to occur within this feature.

Swainson's Hawk (Buteo swainsoni)

State Status – Threatened

Swainson's hawks usually arrive to their breeding grounds in the Central Valley in early March. They often nest peripherally to valley riparian systems as well as utilizing lone trees or groves of trees in agricultural fields. Valley oak, Fremont cottonwood, walnut, and large willow trees, ranging in height from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Nesting sites are primarily composed of sticks, leaves, and bark at elevations of 4-100 feet above the ground and are usually located near water. Nesting occurs from March 1 to August 15, although breeding activities peak from May to July with an average clutch size of three. They typically forage from high to low elevations in search of small mammals, fish, reptiles, and amphibians. Habitats for foraging include: open desert, grassland, or croplands containing intermittent tree stands.

There are several records for Swainson's hawk within five miles of the Twin Cities site. The nearest record is from 2003 and is located in the southern portion of the Twin Cities site.

Swainson's hawk has the potential to forage in the agricultural fields and grasslands on site. Moreover, the eucalyptus trees in the southern portion of the site and those just outside the eastern edge, provide potential nesting habitat.

Greater Sandhill Crane (Grus canadensis tabida)

State Status – Threatened

The greater sandhill crane breeds primarily in Plumas, Sierra, Siskiyou, Modoc, and Lassen counties, but winters within the Sacramento and San Joaquin Valley from Tehama to King County. Wintering foraging habitat consists of annual and perennial grasslands, moist croplands, and open emergent wetlands where

they feed on grasses, forbs, cereal crops, roots, tubers, invertebrates, and small vertebrates. Generally the species prefers treeless plains.

There are no records of greater sandhill crane sightings within five miles of the Twin Cities site, however this species has the potential to forage in the agricultural fields and grasslands on the site. Year round agricultural activities, heavy traffic noise, and lack of inundated crop lands, however, significantly reduces the chance that cranes would utilize this site for wintering habitat.

3.5.3 HISTORIC RANCHERIA SITE ENVIRONMENTAL SETTING

The Historic Rancheria site is primarily undeveloped grassland with the exception of two rural residences and associated outbuildings. The Consumes River passes along the northern edge of the Historic Rancheria site.

Methodology

Prior to conducting the biological surveys of the Historic Rancheria site, biological information was reviewed from the following sources:

- USFWS list, dated September 18, 2011, updated January 8, 2014, of federally-listed species with the potential to occur on or be affected by projects on the Elk Grove USGS 7.5-minute topographic quadrangle (quad) (USFWS, 2013c);
- CNPS query, dated January 8, 2014, of state and federally-listed special-status plant species known to occur on the Elk Grove quad and surrounding quads located within a 5-mile radius (the surrounding quads include: Sloughhouse, Galt, and Clay (CNPS, 2014);
- CNDDB query, dated August 2, 2013, of state and federally-listed special-status species known to occur on the Elk Grove quad and the three surrounding quads within a 5-mile radius (CDFW, 2013);
- CNDDB map of state and federally-listed special-status species known to occur within five miles of the Historic Rancheria site (CDFW, 2013);
- USFWS NWI map of wetland features in the vicinity of the Historic Rancheria site (USFWS, 2013b).

Biological Surveys

General biological surveys and focused botanical surveys were conducted on the Historic Rancheria site on March 26, May 9, July 11, 2013, and April 7, 2014. The focused botanical surveys consisted of conducting a floristic inventory. The general biological surveys consisted of evaluating biological communities and documenting potential habitat for special-status species with the potential to occur within the Historic Rancheria site. Terrestrial and aquatic habitat types were classified using the MCV and the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979) and

were modified based on existing habitat conditions within the Historic Rancheria site. Lists of plant and animal species observed within the Historic Rancheria site are provided in **Appendix L**.

Analysis

Lists of regionally occurring federally and state-listed species were compiled for the Historic Rancheria site based on the USFWS, CNDDB, and CNPS lists (**Appendix L**). An analysis to determine which of these special-status species have the potential to occur within the Historic Rancheria site was conducted. The habitat requirements for each regionally occurring special-status species were assessed and compared to the type and quality of habitats observed onsite during the biological surveys. Several regionally occurring special-status species were eliminated due to lack of suitable habitat within the Historic Rancheria site, elevation range, lack of suitable substrate/soils, and/or geographic distribution. Species determined to have no potential to occur on-site are not discussed further.

Terrestrial Habitat Types

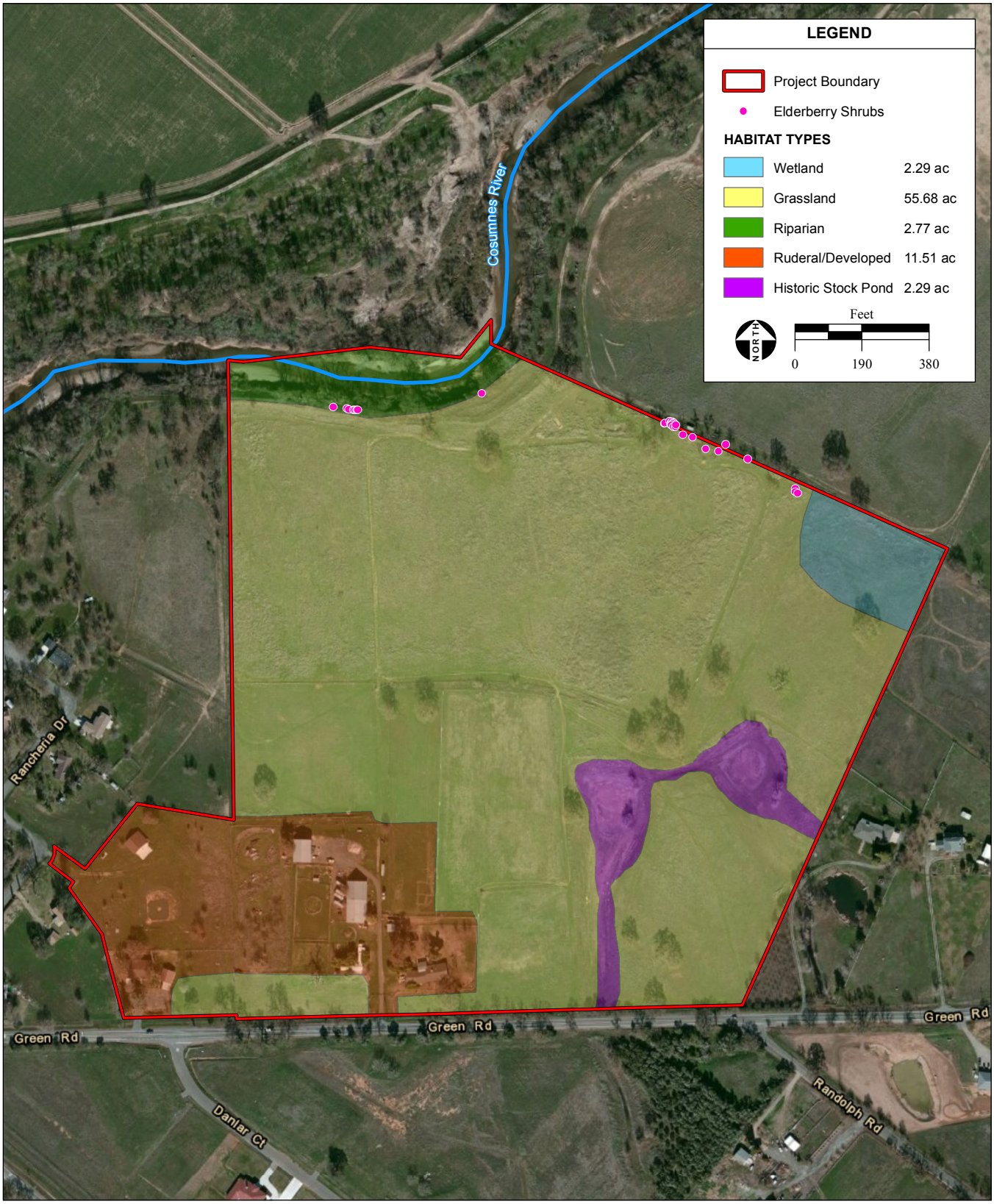
Terrestrial habitat types in the Historic Rancheria site include: nonnative grassland/pastureland, riparian, wetlands, historic stock ponds, and ruderal/developed areas. Dominant vegetation in each vegetative community is discussed below. A habitat map of the Historic Rancheria site is illustrated in **Figure 3.5-3**. Acreages for each of the habitat types are provided on the habitat map and in **Table 3.5-3**. Photographs of the community types within the Historic Rancheria site are illustrated in **Figure 3.5-4**.

TABLE 3.5-3
SUMMARY OF TERRESTRIAL HABITATS ON THE HISTORIC RANCHERIA SITE

Habitat Type	Acres
Historic Stock Ponds	2.29
Nonnative Grassland	55.68
Ruderal/Developed	11.51
Riparian	2.77
Wetland	2.29
Source: AES Site Visit, 2014	

Nonnative Grassland/Pastureland

A majority of the Historic Rancheria site is composed of non-native annual grassland dominated by soft chess (*Bromus hordeaceus*) and ripgut brome (*Bromus diandrus*). Large patches of native forbs occur among the grasses; they were represented mostly by fiddleneck (*Amsinckia menziesii*). Additional prevalent vegetation included: wild oat, slender oat, barley, filaree, yellow star thistle (*Centaurea solstitialis*), milk thistle (Silybum marianum), field mustard (Brassica rapa), English plantain (*Plantago lanceolata*), mouse-hair chickweed (*Cerastium glomeratum*), shepherd's purse (*Capsella bursa-pastoris*), and bristly ox-tongue (*Helminthotheca echioides*). Several elderberry shrubs occur within the northeastern portion of the nonnative grassland (**Figure 3.5-3**). In addition, a few valley oak (*Quercus lobata*) and ailanthus (*Ailanthus altissima*) occur within the Historic Rancheria site.



SOURCE: USFWS National Wetlands Inventory, 6/1984; UC-G Aerial Photograph, 2/2012; AES, 2014

Figure 3.5-3

Habitat Types within the Historic Rancheria Site

PHOTO 1: View southward of nonnative grassland/ pastureland within the Historic Rancheria site.

PHOTO 3: View northeastward of the riparian habitat and the Cosumnes River on the northern boundary of the Historic Rancheria site.

PHOTO 2: View southward of ruderal/developed areas within the Historic Rancheria site.

PHOTO 4: View of elderberry shrub located within the nonnative grassland/pastureland on the northeastern boundary of the Historic Rancheria site.

SOURCE: AES, 2014

Figure 3.5-4
Photographs of the Historic Rancheria Site

Riparian

The Cosumnes River runs along the northern edge of the Historic Rancheria site and supports riparian habitat within and immediately adjacent to the site. A man-made levee has been developed within the Historic Rancheria site to contain the Cosumnes River. Dominant vegetation within the riparian habitat includes: Northern California walnut (*Juglans hindsii*), willow (Salix sp.), Fremont cottonwood (*Populus fremonti*), California manroot (*Marah fabaceus*), Himalayan blackberry, blue elderberry (*Sambucus nigra* ssp. *caerulea*), valley oak, coyote brush (*Baccharis pilularis*), and common rush (*Juncus effuses*).

Wetland

An intermittent seasonal wetland area occurs on the northeastern corner of the Historic Rancheria site. This area appears to have intermittent seasonal flooding from the adjacent property to the east. The area is heavy disturbed by grazing livestock, allowing non-native annual grasses to take root. The vegetation composition is that of non-native annual grassland and or pastureland.

Historic Stock Ponds

Two historic stock ponds are located within the southwestern region of the Historic Rancheria property. These stock ponds were dominated by slender popcorn flower (*Plagiobotrys stipitatus*), with patches of yellow cress (*Rorippa palustris*), common lippia (*Phyla nodiflora*), and mayweed (*Anthemis cotula*). The perimeter of each pool was dominated by Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*); scattered willows (*Salix* spp.) occur on the edges of the ponds.

Ruderal/Developed Areas

Ruderal/developed areas occur within the southern portion of the Historic Rancheria site. These areas include graded roads, driveways, residential dwellings, barns, and equipment storage areas. Dominant species include: cheeseweed (*Malva parviflora*), hairy geranium, bristly ox tongue, milk thistle, and common groundsel.

Potential Waters of the U.S.

During the site assessments conducted on March 26, May 9, July 11, 2013, and April 7, 2014, the Historic Rancheria site was informally assessed for wetlands and waterways, pursuant to their potential to be regulated under the CWA (waters of the U.S.). The Cosumnes River, identified as a "waters of the U.S.," passes along the northern edge of the Historic Rancheria site. The second potential "waters of the U.S." is the intermittent seasonal wetland area occurring on the northeastern corner Historic Rancheria site. Aquatic habitats are illustrated in **Figure 3.5-3**. These features are potentially subject to USACE jurisdiction under Section 404 of the CWA.

Cosumnes River

The Cosumnes River occurs along the northern boundary of the Historic Rancheria site. Dominant vegetation includes those species described previously under the description of riparian habitat. The riparian corridor is shaded by mature trees. On the south bank (levee), land slopes steeply down to within a few feet of the water's edge. The river forms a slight bend so that the property is adjacent to the deeper, outside edge of the bend. Clay and hardpan formations have created a reticulated shoreline with raised benches and canyons where erosion by the river has occurred. On the northern side of the Cosumnes River, the bank is gradual and contains rounded cobble and a gentler shoreline. The Cosumnes River contains habitat suitable for insects, amphibians, reptiles, and fish, including anadromous species.

Intermittent Seasonal Wetland

An intermittent seasonal wetland area occurs on the northeastern corner of the Historic Rancheria site. This area appears to have intermittent seasonal flooding from the adjacent property to the east. This wetland is filled with vegetation that matches that observed within the surrounding meadow as described above for non-native grassland/pastureland. No distinct riparian vegetation was observed surrounding the drainages. This area appears to be heavily disturbed by grazing livestock, and would not support fish.

Wildlife

Wildlife observed within the Historic Rancheria site includes red-tailed hawk, red-shouldered hawk (*Buteo lineatus*), western scrub jay (*Aphelocoma californica*), mourning dove (*Zenaida macroura*), tree swallow (*Tachycineta bicolor*), Audubon's cottontail (*Sylvilagus audubonii*), black tailed jack rabbit (*Lepus californicus*), western bluebird (*Sialia mexicana*), American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), western meadowlark (*Sturnella neglecta*), and Northern mockingbird (*Mimus polyglottos*).

Federally-Listed Species

Federally-listed species include those plant and animal species that are listed as endangered or threatened under the FESA, or formally proposed for listing.

The Historic Rancheria site provides habitat for eight federally-listed insect, fish, reptile, or amphibian species:

- Vernal Pool Fairy Shrimp (VPFS, *Branchinecta lynchi*),
- Vernal Pool Tadpole Shrimp (VPTS, *Lepidurus packardi*),
- Central Valley steelhead (*Oncorhynchus mykiss*),
- Central Valley spring run Chinook salmon and winter run Chinook salmon (*Oncorhynchus tshawytscha*),
- Valley elderberry longhorn beetle (VELB, *Desmocerus californicus dimorphus*; VELB),
- California Tiger Salamander (*Ambystoma californiense*),

- Giant Garter snake (GGS, *Thamnophis gigas*), and
- California Red-legged Frog (CRLF, *Rana draytonii*).

Potential impacts are discussed in **Section 4.5** and mitigation measures, if warranted, are recommended in **Section 5.5**.

Vernal Pool Fairy Shrimp (Branchinecta lynchi; VPFS)

Federal Status – Threatened
State Status – None

Habitat requirements for VPFS are described above in **Section 3.5.2**. There are nine CNDDB records for VPFS within five miles of the Historic Rancheria site (Occurrence numbers: 164,128, 160, 163, and 303, 89, 186, 532, 343). Each of these occurrences is spread out to the west, north, and south, approximately 5 miles from the site. The most recent record (number 532) is from 2007 and was mapped to the north of the Historic Rancheria site. The record states that approximately 10 to 100 adults were observed in a vernal pool that was part of a vernal pool complex within grazed grassland. VPFS have the potential to occur within the intermittent seasonal wetland present within the Historic Rancheria site.

Vernal Pool Tadpole Shrimp (Lepidurus packardi; VPTS)

Federal Status – Endangered
State Status – None

Habitat requirements for VPTS are described above in **Section 3.5.2**. There are six CNDDB records for VPTS within five miles of the Historic Rancheria site (Occurrence numbers: 91, 165, 85, 247, 86, and 28). All documented occurrences are clustered to the west and north of the Historic Rancheria site. The most recent record is from 2007 and is mapped approximately 4.5 miles northwest of the Historic Rancheria site (CNDDB occurrence number: 247). The record states that juvenile VPTS numbering in the 10's were collected from a vernal pool complex in this location. VPTS have the potential to occur within the historic stock ponds present on the Historic Rancheria site.

Central Valley Steelhead (Oncorhynchus mykiss)

Federal Status – Threatened
State Status – None

Central Valley steelhead (Population 11), are known to occur within the Cosumnes River. One natural limit to anadromy is documented on the Cosumnes River by CalFish at mile 36.5, which is upstream of the Historic Rancheria site (CalFish, 2014). Central Valley steelhead are found in cool, clear, fast-flowing permanent streams and rivers with riffles and ample cover in the form of riparian vegetation or overhanging banks. Spawning occurs in streams often within pool tails and riffle complexes or in the lee

of in-stream features such as boulders. For successful breeding, this species requires cold water and a gravel/cobble streambed. Young out-migrate to the ocean where one to four years are spent feeding. Adults usually return to their natal stream, although straying is somewhat more common in steelhead when compared to many other salmonids. Steelhead may live beyond spawning and return in following years to mate.

The Cosumnes River, a portion of which passes along the northern edge of the Historic Rancheria site, provides habitat suitable for steelhead trout; therefore, steelhead trout have the potential to occur along the northern edge of the Historic Rancheria site.

Central Valley Spring-Run Chinook Salmon (Oncorhynchus tshawytscha)

Federal Status – Threatened
State Status – Threatened

Central Valley spring run Chinook salmon spawn in large deep pools in tributaries with moderate velocities; Chinook spawn in patches of medium to large sized cobble primarily in riffles and pool tails. Juveniles spend five to nine months in the river and estuary before entering the ocean (Moyle, 2002). Ocean growth takes one to four years. Returning fish spawn, and guard their nests. Unlike steelhead, Chinook only have one breeding season. The spring-run life history strategy arrives at the spawning grounds in the spring and holds in deep pools before spawning in late summer and early fall.

The Cosumnes River is considered to be suitable for Chinook as an overall species ("Chinook Range"), of which the Spring-run Chinook are a sub-set separated due to life history strategy and spawning period. The site is not within Central Valley Chinook Critical Habitat. Although the Cosumnes River provides habitat suitable for spring-run Chinook, it is outside of the critical habitat mapped for this species by CDFW CalFish. Sloughs comprising the Sacramento delta, at the outflow of the Cosumnes River (over 5 miles west of the site) are recorded as comprising a segment of the Central Valley spring-run Chinook salmon distribution. The Central Valley spring-run Chinook Evolutionarily Significant Unit (ESU) boundary is approximately 1 mile north of the Historic Rancheria site. Therefore, despite suitable habitat availability, the location of the Historic Rancheria site is outside of significant distribution areas.

Sacramento River Winter-Run Chinook Salmon (Oncorhynchus tshawytscha)

Federal Status – Endangered
State Status – Endangered

The Sacramento Winter-Run of Chinook Salmon (winter-run Chinook), returns to the Upper Sacramento River in the winter but delays spawning until spring and summer. The Cosumnes River is considered by CDFW CalFish to be suitable for Chinook as an overall species ("Chinook Range"), of which the winter-run Chinook are a sub-set separated due to life history strategy and spawning period. Juveniles spend five

to nine months in the river and estuary before entering the ocean (Moyle, 2002). Returning fish spawn, and guard their nests. Unlike steelhead, Chinook only have one breeding season and die following spawning.

The site is not within Central Valley Chinook Critical Habitat. The Central Valley winter-run Chinook ESU boundary is approximately five miles northwest of the Historic Rancheria site. The Cosumnes River provides habitat which is potentially suitable for winter-run Chinook. Therefore, despite suitable habitat availability, the location of the Historic Rancheria site is outside of significant distribution areas.

Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus; VELB)

Federal Status – Threatened
State Status – None

Habitat requirements for VELB are described above in **Section 3.5.2**. There are three CNDDB records for VELB within five miles of the Historic Rancheria site. The nearest record is from 1984 (CNDDB occurrence number: 163) and is mapped along the northern boundary of the Historic Rancheria site. The record states that exit holes were observed on elderberry shrubs along four river miles along the Cosumnes River near Wilton. The elderberry shrubs within the Historic Rancheria site provide potential habitat VELB. Elderberry clusters were observed within the riparian habitat along the northern portion of the Historic Rancheria site and within the nonnative grassland/pastureland within the northeastern portion of the Historic Rancheria site. The elderberry shrubs were mapped (**Figure 3.5-3**).

California Tiger Salamander (Ambystoma californiense; CTS)

Federal Status – Threatened
State Status --Threatened

Habitat requirements for CTS are described above in **Section 3.5.2**. There are no CNDDB occurrences documented within a 5-mile radius of the Historic Rancheria site. The nearest occurrence, described above under the Twin Cities site, is greater than 5 miles away. It has been presumed extirpated as of 2001. CTS has the potential to occur within the intermittent seasonal wetland present within the Historic Rancheria site.

Giant Garter Snake (Thamnophis gigas; GGS)

Federal Status – Threatened
State Status – Threatened
Habitat requirements for GGS consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from

flood waters during the snake's dormant season in the winter (California Herps, 2013). This species is highly aquatic and is active during the day and at night in hot weather.

The GGS inhabits small mammal burrows and other soil crevices above prevailing flood elevations throughout its winter dormancy period. GGS typically select burrows with sunny exposure along south and west facing slopes. The breeding season extends through March and April, and females give birth to live young from late July through early September.

There are two CNDDB records for GGS within five miles of the Historic Rancheria site. Both records are about the same distance away from the site. Occurrence 169 is more recent and dates from 2002. This occurrence is located 4 miles to the north and consisted of one adult observed in a ditch at the edge of a wetland swale feature. The historic stock ponds on the Historic Rancheria site, as well as the surrounding grassland provide potentially marginal habitat for this species. Habitat present on the site is of marginally suitable quality; however, this species has the potential to occur within the Historic Rancheria site.

California Red-Legged Frog (Rana draytonii; CRLF)

Federal Status – Threatened
State Status – Species of Special Concern

CRLF is known to occur within aquatic habitats including permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation. CRLF occurs from Mendocino County in the north to Baja California, Mexico in the south, including throughout much of the Sacramento Valley. CRLF are inactive in cold temperatures, or in hot, dry weather. This species may move up to 3.6 kilometers to migrate from non-breeding to breeding sites. Breeding occurs during or after spring rain events. Eggs hatch within two weeks of laying. Metamorphosis occurs within approximately seven months. Aquatic habitat provided within and adjacent to the Historic Rancheria site is of marginal quality for CRLF. The historic stock ponds present on the Historic Rancheria site would not stay wet long enough to support metamorphosis. The Cosumnes River contains riparian habitat, but is of a higher gradient than stream courses typically utilized by CRLF. However, any of these water features may be utilized to facilitate upland migration to more suitable breeding locations.

There are no CNDDB occurrences documented within a 5-mile radius of the Historic Rancheria site. Habitat present on the site is of marginally suitable quality and would only support upland migration during the spring breeding season. Therefore, CRLF only have the potential to occur on the Historic Rancheria site during the upland migration/breeding period.

Migratory Birds and Other Birds of Prey

Migratory birds and other birds of prey have the potential to nest within the riparian habitat and isolated eucalyptus trees located within the nonnative annual grassland. An active red-tailed hawk nest was

present in an oak tree within the nonnative grassland/pasture during the May 9, 2013 biological survey. Other birds were observed foraging, however, no other birds were observed nesting. Migratory birds and other birds of prey have the potential to nest within the Historic Rancheria site. The nesting season ranges from February 15 to September 15.

State-Listed Species

Special-status species that are formally listed by the state and/or recognized by state agencies, CNPS, or other local jurisdictions because of their rarity or vulnerability to habitat loss or population decline, receive no specific protection on lands taken into trust by the federal government, but specific State-listed species are discussed here based on consultation with cooperating agencies (County and Cities). Potentially occurring special-status species are identified in **Table 3.5-4**.

The Historic Rancheria site provides potential habitat for nine regionally-listed special-status wildlife species, two species protected under the Migratory Bird Act, and three state special-status wildlife species: California tiger salamander (*Ambystoma californiense*), Swainson's hawk (*Buteo swainsoni*), Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*) Sacramento River winter-run chinook salmon (*Oncorhynchus tshawytscha)*, giant gartersnake (*Thamnophis gigas*), and bank swallow (*Riparia riparia*). Descriptions for CTS, GGS, and the salmon are discussed above.

Potential impacts are discussed in **Section 4.5** and mitigation measures, if warranted, are recommended in **Section 5.5**.

Swainson's Hawk (Buteo swainsoni)

State Status – Threatened

Habitat requirements for Swainson's hawk are described above in **Section 3.5.2**. There are several recorded sightings of Swainson's hawk within five miles of the Historic Rancheria site including several records on the Cosumnes River riparian corridor from 2001within 0.25 miles west of the project site.

Swainson's hawk has the potential to forage in the pasturelands/grasslands on site. Moreover, trees within the Cosumnes River riparian corridor in the northern and eastern portion of the site as well as trees within the site provide potential nesting habitat for Swainson's hawk.

Bank Swallow (Riparia riparia)

State Status – Threatened

In California, the bank swallow's range extends from far northern counties (i.e., Siskyou, Shasta and Lassen), south along the Sacramento River to Yolo County. It breeds from April through July, and typically nests in burrows in vertical banks, cliffs, and bluffs composed of fine textured and sandy soils. Very occasionally, the bank swallow nests in road cuts and sand and gravel quarries, but always in

TABLE 3.5-4
FEDERAL AND REGIONALLY OCCURRING SPECIAL-STATUS SPECIES THAT HAVE THE POTENTIAL TO OCCUR WITHIN THE HISTORIC RANCHERIA SITE AND/OR THE IMMEDIATE VICINITY

Scientific Name Common Name	Federal/ State Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur On-Site
Invertebrates					
Branchinecta lynchi Vernal pool fairy shrimp	FT/--	Known from Alameda, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kings, Madera, Merced, Monterey, Napa, Placer, Riverside, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Ventura, Yolo, and Yuba counties in California and in southern Oregon (NatureServe, 2014).	Found commonly in a small swale earth slump or basalt-flow depression basin with grassy or muddy bottom in unplowed grassland from 10 to 290 meters in the Central Valley and up to 1,159 meters in the South Coast Mountains Region (Eriksen and Belk, 1999).	Wet season: December to May (adults) Dry season: June to November (cysts)	The intermittent seasonal wetland present on the site habitat for this species.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT/--	Known from Amador, Butte, Calaveras, Colusa, El Dorado, Fresno, Glenn, Kern, Madera, Mariposa, Merced, Napa, Placer, Fresno, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba counties (NatureServe, 2014).	Found in riparian forest communities from 0 to 762 meters. Exclusive host plant is elderberry (*Sambucus* species), which must have stems at least one inch in diameter for the beetle (NatureServe, 2014).	Year round	Elderberry shrubs are present within the Historic Rancheria site, and are potential host plants for this species.
Lepidurus packardi Vernal pool tadpole shrimp	FE/--	Known from Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kings, Merced, Placer, Fresno, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba counties (USFWS, 1994).	Found in a variety of natural and artificial, seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities. Wetland habitats vary in size from 2 square meters to 356,253 square meters and vary in depth from 2 to 15 centimeters (Helm, 1998).	Wet season: November to April (adults) Dry season: May to October (cysts)	The intermittent seasonal wetland present on the site provide habitat for this species.
Fish					
Oncorhynchus mykiss steelhead Central Valley steelhead	FT/--	Spawn in the Sacramento and San Joaquin rivers and tributaries before migrating to the Delta and Bay Area (Moyle, 2002).	Found in cool, clear, fast-flowing permanent streams and rivers with riffles and ample cover from riparian vegetation or overhanging banks. Spawning: streams with pool and riffle complexes. For successful breeding, require cold water and gravelly streambed (Moyle, 2002).	Consult Agency	The Cosumnes River provides habitat for this species.

Scientific Name Common Name	Federal/ State Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur On-Site
Oncorhynchus tshawytscha Chinook salmon Central Valley spring-run	FT/CT	Spawn in the Sacramento River and some of its tributaries. Juveniles migrate from spawning grounds to the Pacific Ocean (Moyle, 2002).	Spawning occurs in large deep pools in tributaries with moderate velocities (Moyle, 2002).	Consult Agency	The Cosumnes River provides habitat for this species.
Oncorhynchus tshawytscha Chinook salmon winter-run, Sacramento River	FE/CE	Spawn in the upper Sacramento River. Juveniles migrate from spawning grounds to the Pacific Ocean (Moyle, 2002).	Returns to the Upper Sacramento River in the winter but delay spawning until spring and summer. Juveniles spend 5-9 months in the river and estuary before entering the ocean (Moyle, 2002).	Consult Agency	The Cosumnes River provides habitat for this species.
Amphibians					
Ambystoma californiense California tiger salamander	FT/CT	Known from Alameda, Butte, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Monterey, Fresno, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Solano, Sonoma, Stanislaus, Tulare, and Yolo counties (California herps, 2013). The Central population range excludes CTS populations in Santa Barbara and Sonoma counties.	Found in grassland, oak savannah, edges of mixed woodland, and lower elevation coniferous forest. Breeds in temporary ponds that form during winter and may dry out in summer (Stebbins, 2003).	November through February (adults) March 15 through May15 (larvae)	The intermittent seasonal wetland present on the site habitat for this species.
Rana draytonii California red-legged frog	FT/CSC	Known along the Coast from Mendocino County to Baja California, and inland through the northern Sacramento Valley into the foothills of the Sierra Nevada mountains, south to eastern Tulare County, and possibly eastern Kern County. Currently accepted range excludes the Central Valley (NatureServe, 2014).	Found in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation from 0 to 1,160 meters (NatureServe, 2014).	November-June	The adjacent Cosumnes River and historic stock ponds facilitate potential use of site. The upland area is a potential migration corridor.
Reptiles					
Thamnophis gigas Giant garter snake	FT/CT	Known from Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Fresno, San Joaquin, Solano, Sutter, Yolo, and Yuba counties (Stebbins, 2003).	Found in agricultural wetlands, irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. Requires water during its active season (early spring through mid-fall) to provide food and cover, emergent, herbaceous wetland vegetation for foraging and cover, grassy banks and openings in waterside vegetation for basking, and higher elevation uplands for cover and refuge from flood waters during	March through September	The historic stock ponds facilitate potential marginal suitable habitat for this species.

Scientific Name Common Name	Federal/ State Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur On-Site
			its dormant season (winter). Inhabits small mammal burrows and other soil crevices with sunny exposure along south and west facing slopes, above flood elevations when dormant.		
Birds					
Buteo swainsoni Swainson's hawk	--/CT/--	In California, breeds in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, Antelope Valley, and in eastern San Luis Obispo County (Polite, 2006).	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires suitable foraging surrounding the nest sites including grasslands, alfalfa, or grain fields supporting rodent populations (Polite, 2006).	March through October	Riparian habitat and grassland within and adjacent to the Historic Rancheria site provides habitat for this species.
Riparia *Bank swallow*	--/CT/--	Breeding range in North America extends from western and central Alaska eastward across Canada to the southern Hudson Bay region, Labrador, and Newfoundland, and south to central California, Nevada, Utah, New Mexico, Oklahoma, Arkansas, Tennessee, northern Alabama, and North Carolina, and disjunctly to southern Texas and adjacent northeastern Mexico (NatureServe, 2014).	Colonial breeder found in open and partly open situations, frequently near flowing water. Nests on steep sand, dirt, or gravel banks, in burrows dug near the top of the bank, along the edge of inland water, or along the coast, or in gravel pits or road embankments (NatureServe, 2014).	April - July	The flowing water of the Consumnes River and its associated banks provide habitat for this species.

STATUS CODES

FEDERAL: United States Fish and Wildlife Service (2014)
FE Federally Endangered
FT Federally Threatened
FC Federal Candidate for Listing

STATE: California Department of Fish and Wildlife (2014)
CE California Listed Endangered
CT California Listed Threatened
CR California Listed Rare
CSC California Species of Special Concern
CFP California Fully-Protected

CNPS: California Native Plant Society (2014)
List 1A Plants Presumed Extinct in California
List 1B Plants Rare, Threatened, or Endangered in California and Elsewhere
List 2 Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

riparian, lacustrine, and coastal habitats. Although the swallow forages on insects in primarily in riparian and wetland habitats, it also hawks invertebrates in grassland and cropland habitats as well.

There are no known occurrences within 5 miles of the Historic Rancheria Site. Bank swallows have the potential to forage and nest along the Cosumnes River riparian corridor.

3.5.4 ELK GROVE MALL SITE ENVIRONMENTAL SETTING

The Mall site was partially developed in 2008 with paved surface parking facilities and partially completed commercial structures including department stores and a movie theater. These commercial structures are currently vacant.

Methodology

Prior to conducting the biological surveys, the following biological information was obtained and reviewed:

- USFWS list, dated May 5, 2014, of federally-listed species with the potential to occur on or be affected by projects on the Elk Grove USGS 7.5-minute topographic quadrangle (quad) (USFWS, 2013a);
- CNPS query, dated May 5, 2014, of state and federally-listed special-status plant species known to occur on the Galt quad and surrounding quads within a 5-mile radius of the site (these surrounding quads include: Elk Grove, Florin, and Bruceville (CNPS, 2014);
- CNDDB query, dated May 5, 2014, of state and federally-listed special-status species known to occur on the Elk Grove quad and those surrounding quads found in a 5-mile radius of the Mall site (CDFW, 2014);
- CNDDB map of state and federally-listed special-status species known to occur within five miles of the Mall site (CDFW, 2014);
- USFWS NWI map of wetland features in the vicinity of the Mall site (USFWS, 2014).

Biological Surveys

A general biological survey and botanical survey of the Mall site was conducted on April 7, 2014, with a follow-up visit on August 15, 2014. The general biological survey consisted of evaluating biological communities and documenting potential habitat for special-status species with the potential to occur within the Mall site. The terrestrial and aquatic habitat types were classified using the *Manual of California Vegetation, Second Edition* (MCV; Sawyer et al, 2009) and the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979) and were modified based on existing habitat conditions within the Mall site. A wetland delineation was performed within an area which includes the Mall site in May of 1998 by Gibson and Skordal Wetland Consultants, and inventories of wildlife and plants were prepared by the same consultant in 1998 and 1999 (Gibson and Skordal Wetland Consultants, 1998a; Gibson and Skordal

Wetland Consultants, 1998b; Gibson and Skordal Wetland Consultants, 1999). Lists of plant and wildlife species observed within the Mall site during the April, 2014 site visit are included in **Appendix L**.

Analysis

Lists of regionally occurring federally and state-listed species were compiled for the Mall site based on the USFWS, CNDDB, and CNPS lists (**Appendix L**). An analysis to determine which of these special-status species have the potential to occur within the Mall site was conducted. The habitat requirements for each regionally occurring special-status species were assessed and compared to the type and quality of habitats observed onsite during the biological surveys. Several regionally occurring special-status species were eliminated due to lack of suitable habitat within the Mall site, elevation range, lack of suitable substrate/soils, and/or geographic distribution. Species determined to have no potential to occur on-site are not discussed further.

Terrestrial Habitat Types

The entire Mall site is considered to be ruderal/developed habitat, as shown in **Figure 3.5-5**. Ruderal/developed areas include graded, paved roads and parking lots throughout the Mall site and partially constructed building shells found throughout the site. These areas are interspersed with nonnative grassland patches. Photographs of the Mall site are provided in **Figure 3.5-6**. No aquatic habitat types are located within the Mall site.

Wildlife

Wildlife observed within the Mall site during the general biological surveys includes red-tailed hawk, western scrub jay (*Aphelocoma californica*), black tailed jack rabbit (*Lepus californicus*), American crow (*Corvus branchyrhynchos*), and Northern mockingbird (*Mimus polyglottos*).

Federally-Listed Species

Federally-listed species include those plant and animal species that are listed as endangered or threatened under the FESA, or formally proposed for listing. The Mall site does not provide habitat for any federally-listed species.

USFWS Critical Habitat

No USFWS critical habitat is located on the Mall site. The nearest critical habitat designated by the USFWS is for the Delta Smelt. This identified area is located approximately 10 miles southwest of the site.

Migratory Birds and Other Birds of Prey

Migratory birds and other birds of prey have the potential to nest within partially completed structures on the Mall site. Birds were observed foraging, however, no birds were observed nesting. The nesting

SOURCE: USFWS National Wetlands Inventory, 6/1984; UC-G Aerial Photograph, 2/2012; AES, 2014

Figure 3.5-5
Habitat Types within the Mall Site

PHOTO 1: Mall structure looking south (4/7/14).

PHOTO 3: Mall site inside partially developed area.

PHOTO 2: Non-native grassland and ruderal developed habitat at Mall site looking east (4/7/14).

PHOTO 4: Ruderal Developed area.

SOURCE: AES, 2014

Figure 3.5-6
Photographs of the Mall Site

season ranges from February 15 to September 15. Migratory birds and other birds of prey have the potential to nest within the Mall site.

State-Listed Species

The Mall site does not provide habitat for any state-listed species.

3.6 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section describes the existing cultural and paleontological conditions for the project alternative sites. The general and site-specific description of cultural resources contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Chapter 4.0**.

3.6.1 REGULATORY SETTING

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) as amended and its implementing regulations found in 36 Code of Federal Regulations (CFR) Part 800, require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting. The Bureau of Indian Affairs (BIA) must comply with Section 106 for the proposed trust acquisition. The significance of the resources must be evaluated using established criteria outlined in 36 CFR 60.4, as described below.

If a resource is determined to be a *historic property*, Section 106 of the NHPA requires that effects of the federal undertaking on the resource be determined. A historic property is defined as:

> *…any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property… (NHPA Sec. 301[5])*

Section 106 of the NHPA prescribes specific criteria for determining whether a project would adversely affect a historic property, as defined in 36 CFR 800.5. An impact is considered adverse when prehistoric or historic archaeological sites, structures, or objects that are listed on or eligible for listing, in the National Register of Historic Places (NRHP) are subjected to the following:

- physical destruction of or damage to all or part of the property;
- alteration of a property;
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- n of a property that causes its deterioration; and
- transfer, lease, or sale of the property out of federal control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

If the historic property will be adversely affected by the undertaking, then prudent and feasible measures to resolve adverse impacts must be taken. The State Historic Preservation Office (SHPO) must be provided an opportunity to review and comment on these measures prior to project implementation.

National Register of Historic Places

The eligibility of a resource for listing in the NRHP is determined by evaluating the resource using criteria defined in 36 C.F.R. §60.4 as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and

A. That are associated with events that have made a significant contribution to the broad patterns of our history;
B. That are associated with the lives of persons significant in our past;
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP. In addition to meeting at least one of the criteria listed above, the property must also retain enough integrity to enable it to convey its historic significance. The National Register recognizes seven aspects or qualities that, in various combinations, define integrity (National Park Service (NPS), 1990). These seven elements of integrity are: location, design, setting, materials, workmanship, feeling, and association. To retain integrity a property will always possess several, and usually most, of these aspects.

While most historic buildings and many historic archaeological properties are significant because of their association with important events, people, or styles (criteria A, B, and C), the significance of most prehistoric and some historic-period archaeological properties is usually assessed under criterion D. This criterion stresses the importance of the information contained in an archaeological site, rather than its intrinsic value as a surviving example of a type or its historical association with an important person or event. It places importance not on physical appearance but rather on information potential.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA), 25 USC 3001 *et seq.*, provides a process for museums and Federal agencies to return Native American cultural items – human remains, funerary objects, sacred objects, or objects of cultural patrimony – to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed

and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on Federal and Tribal lands, and penalties for noncompliance and illegal trafficking.

Archaeological Resources Protection Act of 1979

The Archaeological Resources Protection Act of 1979 (ARPA) (PL 96-95; 16 U.S.C. 470aa-mm), provides for the protection of archaeological resources and sites which are on public and Indian lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before October 31, 1979. ARPA also provides for penalties for noncompliance and illegal trafficking.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires that federal agencies take all practical measures to "preserve important historic, cultural, and natural aspects of our national heritage." NEPA's mandate for considering the impacts of a federal project on important historic and cultural resources is similar to that of Section 106 of the NHPA, and the two processes are generally coordinated when applicable. Section 800.8(a) of NHPA's implementing regulations provides guidance on coordination with NEPA.

3.6.2 SITE SPECIFIC CULTURAL STUDIES

Twin Cities Site

Records and Literature Search

The Twin Cities site area of potential effect (APE) consists of the approximately 282-acre Twin Cities site, plus the locations of off-site infrastructure improvements described in **Section 2.0**. A records search was conducted at North Central Information Center (NCIC) on August 22, 2013 to identify known cultural resource sites in the area. The NCIC is the official state repository of archaeological and historic records and reports for Sacramento County.

The records search and literature review were done to (1) determine whether known cultural resources had been recorded within or adjacent to the APE and determine if the Twin Cities site was subject to survey in the past; (2) assess the likelihood of unrecorded cultural resources based on archaeological, ethnographic, and historical documents and literature; and (3) to review the distribution of nearby archaeological sites in relation to their environmental setting.

Field Survey

AES archaeologists Anna C. Noah, Ph.D., RPA (project director), Brian S. Marks, Ph.D., RPA, and Elizabeth Sharifa Hodges conducted intensive pedestrian surveys of the Twin Cities site on October 3 and 4, 2013 and February 18 and 19, 2014. Good to excellent ground visibility prevailed throughout the

acreage proposed for development. Particular emphasis was placed on examining any lithic objects, irregularities in the soils, or other anomalies. In addition the archaeological crew examined buildings, building and structure ruins, and objects wherever they occurred on the property.

Cultural Setting

Prehistory

The Twin Cities project area is located within the Central Valley Region, an area that humans have probably occupied for approximately 13,000 years. The following synthesis of archaeological data for the region follows the classification scheme of Rosenthal and colleagues for the Central Valley (Rosenthal et al, 2007). They based their classification on David Fredrickson's (1974) California adaptation of the Willey and Phillips (1958) period and stage integrative scheme. Date ranges presented below are based on tree-ring calibrated radiocarbon dates.

Paleo-Indian (11,550 to 8550 B.C.) – This period is evidenced by the presence of fluted points, which are often compared to Clovis points dated elsewhere in North America between 11,550 and 9550 B.C.

Lower Archaic (8550 to 5550 B.C.) – In the Central Valley a significant period of alluvial deposition resulted from climate changes at the end of the Pleistocene. Artifacts characteristic of the Lower Archaic, including stemmed points and flaked stone crescents, mostly occur as isolated finds in the valley.

Middle Archaic (5550 to 550 B.C.) – Warmer, drier conditions prevailed at the beginning of this period. Rising sea levels led to the development of the San Joaquin-Sacramento Delta and new wetland habitat. Fans and floodplains stabilized after an initial period of deposition, and stable Middle Horizon soils became buried in alluvial formations throughout central California.

Upper Archaic (550 B.C. to A.D. 1100) – A cooler, wetter, and more stable climate characterizes this period, although the prolonged droughts associated with the Medieval Climatic Anomaly (MCA) began at about A.D. 900 (and persisted with one extended interruption until about A.D. 1350). Cultural diversity is more pronounced during this period, and it appears that valley people may have colonized well-watered foothill habitats at various times during this period.

Emergent (A.D. 1100 to Historic) –The Emergent Period is characterized by groups that were culturally similar to those who existed during the period of European contact and is associated with the Augustine Pattern in the lower Sacramento Valley and Delta region. A number of cultural innovations shaped the Emergent Period. The introduction of the bow and arrow effectively replaced the previously used dart and atlatl technology. Burial associated artifacts became more elaborate, suggesting an increase in social stratification and complexity. Large towns developed along the river at points where fish weirs were constructed.

Ethnography

At the time of European contact, separate and politically autonomous groups referred to as "tribelets" characterized the typical Native American occupation throughout California (Moratto, 1984). In general, tribelets, governed by a chief, had one or more permanent village sites with smaller seasonal/temporary camps for food procurement scattered throughout the tribelet territory. Tribelets sharing similar cultural elements and linguistic traits comprised "nonpolitical ethnic groups," which ethnologists grouped into the language families we are familiar with today.

Prior to widespread disruption of traditional life ways by Euro-American settlement, the Eastern Miwok (now often glossed as Me-Wuk) occupied the project area (Levy, 1978; Kroeber, 1925). Linguistic studies have identified five separate Miwok languages and additional dialects within the Eastern Miwok grouping: Bay Miwok, Plains Miwok, and Northern, Central, and Southern Sierra Miwok (Levy, 1978).

The Twin Cities site is within the area designated by Kroeber (1925) as belonging to the Plains Miwok. Pre-contact era population estimates suggest a total population of around 11,000 for the Plains Miwok, with tribelets averaging around 400 individuals each. At 10 persons per square mile, population density was probably the highest of any aboriginal group in California (Levy, 1978). Between 1811 and 1834, over 2,100 Plains Miwok baptisms occurred at Spanish (and later Mexican) missions, mostly at Mission San José. Because of these and other early historic period disruptions, only fragmentary knowledge exists about the number, names, and locations of tribelet settlements among the Plains Miwok. (Information that is more complete is available for the nearby Northern Sierra Miwok.) The nearest settlement to the Twin Cities site may have been Tihuechemne, located on the right bank of the Cosumnes River a few miles to the west (Levy, 1978).

Today, the Wilton Rancheria is a federally recognized Indian tribe, possessing sovereign powers by virtue of such recognition. It originally gained federal recognition in 1928; however, in 1964 the U.S. government terminated the Tribe's federal recognition under authority of the California Rancheria Act of 1958. After many years' effort by tribal members, the Tribe regained its federal recognition by an Act of Congress in 2009 (**Appendix C**).

History

Spanish occupation of what became California began in 1769 with the establishment of the Mission San Diego de Alcalá and the San Diego Presidio. Ultimately, a total of 21 Franciscan missions were established, the last and most northerly being the Mission San Francisco Solano de Sonoma, founded in southern Sonoma County in 1823.

During the ensuing Mexican period, various governors of California granted enormous tracts of land to citizens who had served the Mexican government. The project area lies within the Rancho Sanjon de los Mokelumnes, a Mexican period land grant given in 1844 by Governor Manuel Micheltorena to Anastasio

Chabolla (also spelled "Chaboya"), and a former soldier of the San Francisco Presidio. The land grant extended from the Cosumnes River on the north to the Mokelumne River on the south.

In the early 1850s, Chism Cooper Fugitt founded the town of Liberty approximately one mile south of the present City of Galt. It was a stopping location for freight haulers on their way to the Mother Lode. Liberty had a population of approximately one hundred, with a church, hotel, boarding house, and blacksmith shop, and in 1861 it became a stage coach stop between Stockton and Sacramento (Galt Area Historical Society, 2005).

One of the first settlers in the area of Galt proper was John McFarland, who named the settlement that developed there "Galt," after his hometown in Ontario, Canada, which in turn was named after the Scottish novelist, John Galt (Gudde, 1969). Small farmhouses with large agricultural fields sprang up in the area. In 1861, the Central Pacific Railroad came through, bypassing Liberty in favor of Galt (Galt Area Historical Society, 2005). With the building of the railroad, Galt became a transportation hub, from which locals shipped wheat, cattle, and ore from the Mother Lode, and clay and lumber from Ione (Greer, 1999).

The Southern Pacific Railroad had its origins in the Central Pacific Railroad Company of California, which was responsible for construction of the western portion of the first transcontinental railroad from Sacramento. This portion of the Pacific Railroad was laid east 690 miles across the Sierra Nevada mountain range and Nevada, where it met the Union Pacific at Promontory, Utah on May 10, 1869. The same year, the Niles and Sacramento Line was completed from Sacramento through Galt to Modesto and then to Niles Junction in the southern San Francisco Bay area where it connected to local lines (Greer, 1999). This line, now owned by the Union Pacific Railroad, runs adjacent to the Twin Cities site on its west side. By 1910, a railroad siding and short single-ended spur had been constructed just west of the site, and was named "Need."

Small communities were established to the north of Galt, each anchored by an elementary school. Closest to the project area were Arno, to its north, and Twin Cities, just to the south. George Need, for whose family the Need siding was probably named, was a prominent local farmer. Born in Germany in 1836, he immigrated to the United States in 1840 with his parents, and the family settled in Indiana. His older brother, Michel (Michael), came to California in 1852, where he died in 1868. The elder Michael Need, a general farmer, was listed as a registered voter in the Hicksville Precinct in 1867. In 1857, at the age of 20, George came to California, and in 1867, purchased 775 acres located five miles from Galt in Dry Creek Township (which includes the present-day Twin Cities site) and made many improvements. Also in 1867 he married Sarah J. Ehler of Indiana; they had six children (Galt Area Historical Society, 2004). The 1889-1890 Sacramento City and County Directory lists George W. Need as a farmer of 771 acres and, along with E. E. Wright, as proprietor of Wright, Need & Co., a general merchandise store in Galt (Husted, 1890).

By the second decade of the twentieth century, the Galt area landscape was dotted with dairy farms, producing milk to take to market. Fred Harvey, son of one of Galt's founders, Odem Harvey, convinced the Utah Condensed Milk Company, producer of Pet Evaporated Milk, to open the Sego Milk plant in Galt in late 1916. By 1917, local dairymen were sending their milk to the Sego Milk Plant by truck twice a day. The plant expanded to produce powdered milk and ice cream concentrate. This brought steady employment and expanded rail service to Galt. During World War II, the Sego Milk Plant supported the war effort by shipping large quantities of powdered milk to national and international locations. The plant operated through at least the 1950s, and eventually the Sego Milk Company outgrew its Galt facility and left the area (Galt Area Historical Society, 2006).

Resources within the APE

There is no record of previous cultural resource studies on the Twin Cities site. Within a half mile, the NCIC has records of 10 studies, but none of these studies identified cultural resources within the half-mile radius of the Twin Cities site. Based on the field survey, three potential historic resources were identified on the property, two single-family residences and a concrete slab containing two concrete-lined privy pits, a red concrete slab, and a small scatter of historic artifacts (Twin Cities Confidential Cultural Resources Report; AES, 2014a).

Historic Rancheria Site

Records and Literature Search

The Historic Rancheria site APE consists of the entire 75-acre property. The western parcel of the Historic Rancheria site is located within the boundaries of the Historic Wilton Rancheria. An NCIC records search was conducted on March 18, 2014.

Field Survey

AES archaeologist, Brian S. Marks, Ph.D., RPA, conducted intensive pedestrian surveys of the Historic Rancheria site on April 30, 2014 and May 2, 2014. Because the property is for the most part divided into agricultural fields, each field or fallow area was walked in a series of either east-west or north-south oriented transects spaced at approximately 15-meter intervals. The archaeological crew examined buildings, building and structure ruins, and objects wherever they occurred on the property.

Cultural Setting

Prehistory and Ethnography

Prehistoric and ethnographic information for the Historic Rancheria site is identical to that provided for the Twin Cities site.

History

The early history surrounding the Historic Rancheria site is similar to that described previously for the Twin Cities site.

The community of Wilton is one-quarter mile to the west of the Historic Rancheria site. The community of Wilton was named for Seth A. Wilton, the owner of the land where the Central California Traction rail line built a station. Seth A. Wilton was a dairy and poultry rancher who had lived in the area since 1887. The Wilton Post office is listed in 1915 (Gudde, 1969). The community is known for hay and alfalfa production as well as some equestrian ranches. The community of Wilton is lies generally west of the Historic Rancheria site.

Resources within the APE

Two previous cultural resource studies have occurred on a portion of the Historic Rancheria site, and within a half mile of the Historic Rancheria site, the NCIC has records of 10 additional studies. None of these studies identified cultural resources within or adjacent to the Historic Rancheria site. Based on the survey, two potential historic resources, a barn and a chicken coop, were identified on the Historic Rancheria site (Historic Rancheria Confidential Cultural Resources Report; AES, 2014b).

Elk Grove Mall Site

Records and Literature Search

The Elk Grove Mall site APE consists of the entire 28-acre Mall site. The western parcel of the Historic Rancheria site is located within the boundaries of the Historic Wilton Rancheria. An NCIC records search was conducted on March 18, 2014.

Field Survey

Examination of the site from aerial photographs and from observations by an archeologist from the site boundary (due to limited on-site access) confirmed that most of the property is graded, paved for surface parking, and built upon with partially completed buildings near the center of the site. The northeastern portion of the property, though graded, is unpaved and overgrown with ruderal plants.

Cultural Setting

Prehistory and Ethnography

Prehistoric and ethnographic information for the Mall site is identical to that provided for the Twin Cities site.

History

The early history of the Mall site is similar to that described previously for the Twin Cities site. In 1869, the Niles Line and the Sacramento Line were completed from Sacramento through Elk Grove to Modesto and then to Niles Junction in the southern San Francisco Bay area where it connected to local lines. This line, now owned by the Union Pacific Railroad, is approximately 0.7 miles east of the Mall site.

The Mall site is located within the current city limits of Elk Grove; however, it is over a half mile away from any residential concentration. The City of Elk Grove was founded in 1850 by James Hall as a stagecoach stop between Sacramento and Stockton (Elk Grove Historical Society, 2014) and has grown into the second largest city in Sacramento County. Hwy 99 follows the general route of this stage trail.

Resources within the APE

There are records of two previous cultural resource studies prepared for the Lent Ranch Property (regional commercial development) that encompassed the Mall property and vicinity. Within a half mile, the NCIC has records of an additional four studies, but none of these studies identified cultural resources within a half-mile of the Mall site (Mall Site Confidential Cultural Resources Report; AES, 2014c).

3.6.3 NATIVE AMERICAN CONSULTATION

In accordance with Section 106 of the NHPA, letters requesting a check of the Sacred Lands File for the site of the Proposed Project and alternatives were sent to the California Native American Heritage Commission (NAHC) (**Appendix M**). The NAHC responded indicating that they have no record of sacred lands within or near the three project areas. The NAHC also supplied a list of Native American individuals and groups who may have additional information about cultural resources in the three project areas. These individuals and groups were contacted, and replies were received from Wilton Rancheria, the Buena Vista Rancheria of Me-Wuk Indians, and the United Auburn Indian Community of the Auburn Rancheria. None of the letters mentioned any known cultural resources in the vicinity.

3.6.4 PALEONTOLOGICAL RESOURCES

Paleontological resources are defined as the traces or remains of prehistoric plants and animals. Such remains often appear as fossilized or petrified skeletal matter, imprints, or endocasts, and reside in sedimentary rock layers. Paleontological resources are considered important for their scientific and educational value. Fossil remains of vertebrates are considered significant. Invertebrate fossils are considered significant if they function as index fossils. Index fossils are those that appear in the fossil record for a relatively short and known period of time, allowing geologists to interpret the age range of the geological formations in which they are found. This section presents documentation on reported paleontological deposits on the Mall site and surrounding region.

The Antiquities Act of 1906 (PL 59-209; 16 U.S.C. 431 *et seq*.; 34 Stat. 225) calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on lands owned or controlled by the Government of the United States. Additional provisions appear in the Archaeological and Historic Data Preservation Act of 1974, as amended, for the survey, recovery, and preservation of significant scientific, prehistoric, historic, archaeological, or paleontological data, in such cases wherein this type of data might be otherwise destroyed or irrecoverably lost as a result of Federal projects.

Site and Regional Geology

The geological characteristics of the Mall site are detailed in **Section 3.2**, Geology and Soils. The region including the proposed sites is situated in the valley portion of the Great Valley Province. It is composed primarily of alluvium as well as granite and other ultramafic sediment that had eroded from the higher elevations of the Sierra Nevada.

A records and literature search was conducted in January 2005. Several resources were consulted, including the online database at the University of California Museum of Paleontology (UCMP), the Sacramento County General Plan, the California Geological Survey and the United States Geological Survey (USGS). No records or references to fossil records were found in any of the resources listed. The City of Elk Grove General Plan Environmental Impact Report (EIR) and the Lent Ranch Marketplace EIR were also reviewed for information on relevant cultural or paleontological resources. The Elk Grove General Plan EIR stated that although no fossils had been officially reported, in 1959, a local farmer discovered a Pleistocene bone bed along the west side of Deer Creek (City of Elk Grove, 2000), which is located approximately one mile north of the Historic Rancheria site.

Paleontological Findings

Available literature indicates few paleontological resources are located in the vicinity of the Twin Cities, Historic Rancheria, and Mall sites; however, fossils have been identified within similar environments within California. Therefore, there is the potential for unreported subsurface paleontological resources to be present on the Proposed Project and alternative sites.

3.7 SOCIOECONOMIC CONDITIONS

This section addresses the existing socioeconomic conditions of the Proposed Project, alternatives, and surrounding regions. The general and site specific profiles of socioeconomic conditions described in this chapter provide the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and evaluated in **Section 4.0**.

3.7.1 SOCIOECONOMIC CHARACTERISTICS OF THE WILTON RANCHERIA

The Wilton Rancheria has a total enrollment of approximately 700 members, of which 9.3 percent are 55 or older and 4.9 percent are 62 or older (**Table 3.7-1**). The Tribe has a large percentage of younger people than is the average in the United States, as 40.2 percent of the Tribe's members are under the age of 18. This percentage is significantly higher than the percentage of the population under 18 in the United States (23.3 percent) and California (23.9 percent).

TABLE 3.7-1
WILTON RANCHERIA DEMOGRAPHIC CHARACTERISTICS

Total membership	676
Median age (years)	22
Tribal members younger than 18	40.2%
Tribe's members 55 or older	9.3%
Tribe's members 62 or older	4.9%
Families below the federal poverty line	62.4%
Source: **Appendix C** -The Unmet Needs of Wilton Rancheria	

The median age for the Tribe is 22. In 2013, the Tribe's crude birth rate was 17.8, as compared to a U.S. birth rate of 13. The Tribe's rate of natural increase in 2013 was 1.6 percent, as compared to the U.S. rate of natural increase of 0.5 percent (**Appendix C**).

3.7.2 SOCIOECONOMIC CHARACTERISTICS OF SACRAMENTO COUNTY, CALIFORNIA

Population

The City of Galt was home to a total population of 24,229 in 2013. Total population is expected to grow over the next six years to 25,988 in 2019. This represents a projected annual growth rate of 1.2 percent. Total population for the City of Elk Grove was estimated at 156,781 in 2013. This number is expected to increase over the next six years at an annual rate of 1.2 percent. This is expected to result in a projected total population of 168,159 in 2019. Sacramento County was home to an estimated 1,453,442 people in 2013. Total population in this region is expected to grow over the next six years, with total population projected at 1,558,040 in 2019. This represents an estimated annual growth rate of 1.2 percent. According to the Public Policy Institute of California, California's population will increase to approximately 44 million to 48 million people by 2025. The Sacramento metropolitan area is one of the areas likely to absorb the majority of the estimated population growth (PPIC, 2008). During the five-year

period beginning January 1, 2014, it is estimated the region will experience a 1.2 percent annual growth rate (**Appendix N**). Regional population data is summarized below in **Table 3.7-2**.

TABLE 3.7-2
REGIONAL POPULATION

Location	2013	2019 (Projected)
City of Galt	24,229	25,988
City of Elk Grove	156,781	168,159
Sacramento County	1,453,442	1,558,040
Source: **Appendix N** – Socioeconomic Analysis		

Housing

Housing trends between 2000 and 2010 included a prominent increase in the percentage of vacant homes in communities where the alternative sites are located, as shown in **Table 3.7-3**. Specifically, the Sacramento County vacancy rate increased from 4.5 percent in 2000 to 7.6 percent in 2010. There was a moderate increase in the total number of units for said areas in the duration discussed above as well, except for the City of Elk Grove, which nearly tripled the number of vacant units between the years 2000 and 2010. The increase in the number of vacant units in the region was predominantly due to the Great Recession, which impacted housing prices and vacancy rates.

TABLE 3.7-3
REGIONAL HOUSING

Location	2010		
	Total Units	Vacancy Rate (%)	Vacant Units
City of Galt	7,678	5.4	415
City of Elk Grove	50,634	5.3	2,684
City of Lodi	23,792	7.1	1,689
50% of City of Stockton (i.e. that portion within 25-mile radius)	49,819	9.1	4534
City of Sacramento	190,911	8.5	16,227
City of Rancho Cordova	25,749	8.0	2,038
Sac. County not included above within 25-mile radius of Twin Cities site (1)	42,185	7.6	3,206
Totals: Within 25-mile radius of Twin Cities site	390,768		30,793
Sacramento County	555,932	7.6	42,251

Source: **Appendix N** – Socioeconomic Analysis for the City of Galt, City of Elk Grove and Sacramento County. Data for other locations obtained from America Fact Finder, 2010 Housing Characteristics, U.S. Census.
1. Estimated at 15% of total Sacramento County, not otherwise accounted for in Sacramento County cities listed above.

Employment

Unemployment statistics for communities adjacent to the alternative sites are shown below in **Table 3.7-4**. In 2012, the U.S. unemployment rate was estimated at 7.8 percent (Council of Economic Advisers, 2013).

TABLE 3.7-4
UNEMPLOYMENT RATES

Date	Sacramento County/City of Galt[1]	City of Elk Grove
2013	8.8	7.1
2012	10.5	8.5
2011	12.1	9.8
2010	12.7	10.4
2009	11.3	9.1
2008	7.2	5.8

[1]Unemployment rates for the City of Galt are identical or nearly identical to those for Sacramento County. Consequently, data for both regions are presented in a single column.
Source: **Appendix N** – Socioeconomic Analysis

The ten largest employers in Sacramento County are shown in **Table 3.7-5**. The dominant employers are the government (63% of employees represented in the table work for the State or County) and the health services sector (20% of employees represented in the table are employed in this sector). The public sector provides most of the jobs represented in **Table 3-7.5**. The exact number of the employees listed for each employer is likely to fluctuate as a result of factors including, but not limited to: the annual State of California fiscal budget; national, state and local economic conditions; newly implemented national, local and regional affecting policies; and changes to the employer's business base that may include technological advancements and competition from similar industries.

Income

According to the U.S. Census Bureau, the median household income for Sacramento County in 2013 was $71,028, which is greater than that of the City of Galt, but substantially less than that of the City of Elk Grove (**Table 3.7-6**). The 2013 median household income was $65,486 in the City of Galt and $89,466 in the City of Elk Grove. The projected annual average growth rate for all three areas is 0.5 percent.

Property Tax

Sacramento County property tax information for the Twin Cities site (**Table 3.7-7**), the Historic Rancheria site (**Table 3.7-8**), and the Mall site (**Table 3.7-9**) is displayed below.

TABLE 3.7-5
TEN LARGEST EMPLOYERS IN SACRAMENTO COUNTY

Employer Name	Full-Time Employees	Industry
State of California	69,763	Government
Sacramento County	11,450	Government
UC Davis Health System	7,725	Health Services
Dignity Health	7,069	Health Services
Intel Corporation	6,633	Technology
Kaiser Permanente	6,360	Health Services
Sutter Health Sacramento	5,765	Health Services
Elk Grove School District	5,021	Education
Sacramento City School District	5,000	Education
San Juan School District	4,700	Education
Source: **Appendix N** – Socioeconomic Analysis		

TABLE 3.7-6
ANNUAL AVERAGE HOUSEHOLD INCOME

Location	2013	2019 (Projected)
City of Galt	$65,486	$67,549
City of Elk Grove	$89,466	$92,289
Sacramento County	$71,028	$73,268
Source: **Appendix N** – Socioeconomic Analysis		

TABLE 3.7-7
TWIN CITIES SITE PROPERTY TAX INFORMATION – FISCAL YEAR 2013-2014

Assessor's Parcel Number (APN)	Zoning	Acreage (square feet)	Assessed Value	Property Taxes
148-0010-018	AG80 – Agricultural Cropland – 80 acres	5,859,691	$1,258,524	$13,957
148-0041-009	AR 2 – Agricultural-Residential – 2 acres	7,103	$9,321	$113
148-0041-006	AR 2 – Agricultural-Residential – 2 acres	432,551	$419,170	$4,710
148-0041-004	AR10 – Agricultural-Residential – 10 acres	435,600	$349,088	$3,935
148-0041-001	AR10 – Agricultural-Residential – 10 acres	907,355	$254,892	$2,851
148-0031-007	AG80 – Agricultural Cropland – 80 acres	709,157	$228,478	$2,553
148-0010-060	AG80 – Agricultural Cropland –80 acres	3,678,206	$262,315	$2,846
Total			$2,781,788	$30,964
Source: Sacramento County Parcel Assessor Viewer, 2014a; Property Tax Bill Information System, 2014b. Data is for the fiscal year ending June 30, 2014.				

TABLE 3.7-8
HISTORIC RANCHERIA SITE PROPERTY TAX INFORMATION – FISCAL YEAR 2013-2014

Assessor's Parcel Number (APN)	Zoning	Acreage (square feet)	Assessed Value	Property Taxes
126-0210-024	AG80 – Agricultural – 80 acres	2,192,375	$175,762	$2,581
126-0210-025	AG80 – Agricultural – 80 acres	871,200	$22,771	$587
126-0230-001	A 2 – General Agricultural	158,994	$268,522	$2,774
126-0230-002	A 2 – General Agricultural	63,598	$587,437	$6,037
Total			$1,054,492	$11,979

Source: Sacramento County Parcel Assessor Viewer, 2014a; Property Tax Bill Information System, 2014b. Data is for the fiscal year ending June 30, 2014.

TABLE 3.7-9
ELK GROVE MALL SITE PROPERTY TAX INFORMATION – FISCAL YEAR 2013-2014

Assessor's Parcel Number (APN)	Zoning	Acreage (square feet)	Assessed Value	Property Taxes
134-1010-001	SPA-LR – Lent Ranch Special Planning Area (SPA)	4,385,621	$125,677,007	$431,599

Source: Sacramento County Parcel Assessor Viewer and Property Tax Bill Information System, 2014. Data is for the fiscal year ending June 30, 2014.

Educational Attainment

The levels of educational attainment in each of the prospective locations for the project site in order from lowest to highest are the City of Galt, Sacramento County, and the City of Elk Grove, as shown in **Table 3.7-10**. The City of Galt's educational attainment level was substantially lower compared to the other analyzed locations and had a smaller public school system than the City of Elk Grove. The City of Elk Grove also evidenced a higher level of educational attainment than the other two areas.

TABLE 3.7-10
2013 EDUCATIONAL ATTAINMENT

Educational Attainment	City of Galt	City of Elk Grove	Sacramento County
Less than 9th grade	8%	5%	7%
9th to 12th grade	11%	5%	8%
High school graduate	28%	19%	22%
Some college	28%	26%	26%
Associate degree	9%	11%	9%
Bachelor's degree	11%	25%	19%
Graduate/professional degree	5%	9%	9%
Total	100%	100%	100%

Source: **Appendix N** – Socioeconomic Analysis

3.7.3 ENVIRONMENTAL JUSTICE

Regulatory Setting

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, as amended, directs federal agencies to develop an Environmental Justice Strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The Council on Environmental Quality (CEQ) has oversight responsibility of the federal government's compliance with Executive Order 12898 and the National Environmental Policy Act (NEPA). The CEQ, in consultation with the U.S. Environmental Protection Agency (EPA) and other agencies, has developed guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed.

According to guidance from the CEQ (1997) and EPA (1998), agencies should consider the composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by a proposed action and, if so, whether there may be disproportionately high and adverse environmental effects to those populations. Communities may be considered "minority" under the executive order if one of the following characteristics apply:

- The cumulative percentage of minorities within a Census tract is greater than 50 percent (primary method of analysis).
- The cumulative percentage of minorities within a Census tract is less than 50 percent, but the percentage of minorities is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (secondary method of analysis).

According to EPA, either the county or the state can be used when considering the scope of the "general population." A definition of "meaningfully greater" is not given by the CEQ or EPA, although the latter has noted that any affected area that has a percentage of minorities above the state's percentage is a potential minority community and any affected area with a minority percentage double that of the state's is a definite minority community under Executive Order 12898.

Communities may be considered "low-income" under the executive order if one of the following characteristics applies:

- The median household income for a Census tract is below the poverty line (primary method of analysis).
- Other indications are present that indicate a low-income community is present within the Census tract (secondary method of analysis).

In most cases, the primary method of analysis will suffice to determine whether a low-income community exists in the affected environment. However, when a Census tract income may be just over the poverty line or where a low-income pocket within the tract appears likely, the secondary method of analysis may be warranted. Other indications of a low-income community under the secondary method of analysis include limited access to health care, overburdened or aged infrastructure, and dependence on subsistence living.

Affected Environment

To determine whether a proposed action is likely to have disproportionately high and adverse effects on a population, agencies must identify a geographic scale for which they will obtain demographic information. Census tracts are a small, relatively permanent statistical subdivision of a county delineated by a local committee of Census data users for the purpose of presenting data. Census tracts are designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time of establishment. Therefore, statistics of Census tracts provide a more accurate representation of a community's racial and economic composition.

The 18 census tracts that were analyzed include Census Tract 95.01, which includes the Twin Cities site, Census Tract 94.04, which includes the Historic Rancheria site, and Census Tract 96.38, which includes the Mall Site (**Figure 3.7-1**).

Race

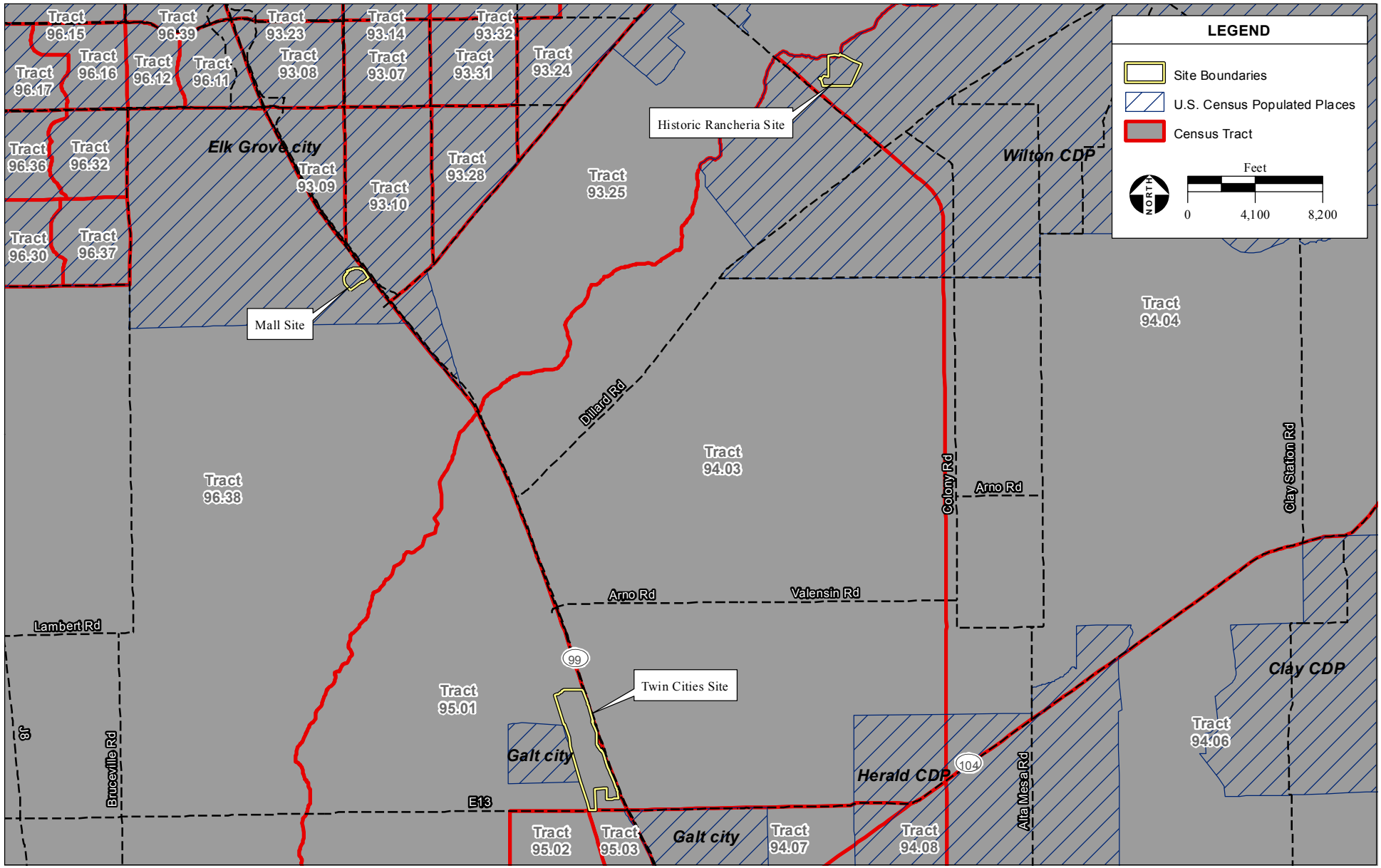
The following races are considered minorities under the executive order:

- American Indian or Alaskan Native
- Asian or Pacific Islander
- Black, not of Hispanic origin
- Hispanic

Populations of two or more races and populations classified as "Other" were also considered to be minority races for the purpose of the environmental justice analysis.

The U.S. Census Bureau's 2012 Census provides the racial data available by Census tract. Since the data was reported in April 2010, the racial composition of the Census tracts is not expected to have changed substantially. **Table 3.7-11** displays the population of each minority race by Census tract in the vicinity of the proposed project.

The State of California has a 57 percent minority population out of approximately 37 million residents. The population in the census tract containing the Twin Cities site is composed of approximately 95 percent minorities, the Historic Rancheria site 38 percent, and the Mall site 67 percent. Adjacent Census



SOURCE: U.S. Dept. of Commerce, 2010 Census; AES, 2014

Figure 3.7-1
Census Tracts

TABLE 3.7-11
MINORITY POPULATION – PROJECT ALTERNATIVE SITES AND NEARBY CENSUS TRACTS

Census Tract	Total Popula-tion	White (alone)[1]	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Other Race	Two or More Races	Hispanic or Latino (of any race)	Total Minority Popula-tion	Percent Minority
Sacramento County	1,418,788	508,955	147,058	14,308	203,211	13,858	131,691	93,511	306,196	909,833	64.1
TWIN CITIES SITE VICINITY											
94.07	9,944	2,939	191	106	461	57	1,752	668	3,770	7,005	70.4
94.08	1,783	524	72	24	144	10	253	148	608	1,259	70.6
95.01	2,772	138	30	65	48	15	767	169	1,540	2,634	95.0
95.02	7,055	2,191	149	141	164	18	1,320	356	2,716	4,864	68.9
95.03	3,067	892	36	43	48	3	559	153	1,333	2,175	70.9
95.04	2,059	246	15	44	45	5	561	113	1,030	1,813	88.1
HISTORIC RANCHERIA SITE VICINITY											
86	6,784	5,148	187	52	224	16	211	243	703	1,636	24.1
94.03	2,038	1,185	20	10	90	4	218	77	434	853	41.9
94.04	5,921	3,662	222	66	367	9	426	305	864	2,259	38.2
MALL SITE VICINITY											
93.09	2,282	1,590	44	33	124	4	55	128	304	692	30.3
93.10	7,000	3,880	287	69	439	41	480	452	1,352	3,120	44.6
93.25	836	486	19	6	77	0	76	25	147	350	41.9
96.08	7,597	169	1,558	44	2,815	187	687	700	1,437	7,428	97.8
96.11	3,165	932	482	19	431	38	266	302	695	2,233	70.6
96.12	5,073	1,289	663	29	995	26	417	477	1,177	3,784	74.6
96.32	6,811	1,078	952	14	2,492	95	437	576	1,167	5,733	84.2
96.37	6,003	765	970	19	2,403	94	362	457	933	5,238	87.3
96.38	4,330	1,437	838	22	524	19	380	155	955	2,893	66.8

[1]Calculated as total white population less Hispanic and Latino population.
Source: U.S. Census Bureau, 2010a DP-1 Profile of General Population and Housing Characteristics: 2010b, 2010c Demographic Profile Data

tracts vary in minority population numbers, but almost all of the Census tracts shown in **Table 3.7-11** include substantial minority populations.

Income

The U.S. Census Bureau's 2012 American Community Survey five-year estimate data represents the most current household income data available by Census tract. The use of older income data is expected to

result in a conservative estimate of income, given that income levels tend to rise over the years due to inflation. **Table 3.7-12** displays the median household income and poverty income limit for each identified Census tract. A low-income community is defined as a Census tract where the median household income falls below the poverty limit. None of the census tracts analyzed are classified as low-income communities.

TABLE 3.7-12
HOUSEHOLD INCOME – PROJECT SITE ALTERNATIVES AND NEARBY CENSUS TRACTS

Census Tract	Median Household Income	Average Household Size	Poverty Threshold[1]
TWIN CITIES SITE VICINITY			
94.07	$62,154	3.30	$23,850
94.08	$84,917	3.71	$23,850
95.01	$45,637	3.20	$23,850
95.02	$69,654	3.19	$23,850
95.03	$37,938	2.63	$19,790
95.04	$51,417	3.07	$23,850
HISTORIC RANCHERIA SITE VICINITY			
86	$100,375	2.55	$19,790
94.03	$67,500	3.15	$23,850
94.04	$95,228	2.72	$19,790
MALL SITE VICINITY			
93.09	$68,798	2.57	$19,790
93.10	$66,620	2.75	$19,790
93.25	$71,061	2.95	$19,790
96.08	$57,413	3.12	$23,850
96.11	$65,929	3.19	$23,850
96.12	$72,909	3.07	$23,850
96.32	$95,096	3.60	$23,850
96.37	$94,727	4.31	$27,910
96.38	$71,769	2.46	$19,790

[1]Average household size is conservatively rounded up to the nearest person.

Source: U.S. Census Bureau, 2012 American Community Survey 5-Year Estimates; HHS, 2014

3.8 TRANSPORTATION/CIRCULATION

This section describes the existing conditions at the sites of the project alternatives. The general and site-specific description of transportation and circulation contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Chapter 4.0**.

3.8.1 EXISTING CIRCULATION NETWORK

Roadways in the vicinity of the Twin Cities, Historic Rancheria, and Mall sites are shown in Figure 1 and Figure 2 of **Appendix O** and are described below.

Twin Cities Site

Twin Cities Road (SR 104) provides east-west regional access to southern Sacramento County and northern Galt. Twin Cities Road is currently configured as a two-lane arterial with a two-way left turn lane from East Stockton Boulevard to Park Terrace Drive. The segment of Twin Cities Road between Christensen Road and Cherokee Lane is designated as a future six-lane expressway in the 2030 Galt General Plan.

East Stockton Boulevard and West Stockton Boulevard are two-lane frontage roads that run along the east and west sides of State Route 99 (Hwy 99), respectively. These roadways run from north of Twin Cities Road to south of Walnut Avenue and provide direct access to Hwy 99 immediately north of Twin Cities Road via hook ramps as part of the Hwy 99/Twin Cities Road interchange. The posted speed limit on both roadways is 45 mph south of Twin Cities Road. There are no speed limit signs north of Twin Cities Road for either roadway; therefore, the speed limit is assumed to be 55 mph per the California Vehicle Code.

Cherokee Lane is a two-lane collector roadway that runs north–south and provides access to rural residential and agricultural uses. Cherokee Lane provides a north–south connection between the arterials of Twin Cities Road and Simmerhorn Road.

Mingo Road is a two-lane road that runs east/west between McKenzie Road and Stockton Boulevard/Hwy 99. This approximately one-mile segment of road provides access to Northbound (NB) Hwy 99 and serves very low density residential and agricultural uses. There is currently no roadway connection spanning Hwy 99 at Mingo Road; thus, access is limited between the east and west sides of the freeway at this location.

Fermoy Way is a two-lane residential collector with a posted speed limit of 30 mph. This residential collector is bounded by commercial uses along the northernmost portion of the road and to single family

residential uses south of the commercial uses. Additionally, Fermoy Way provides an alternative route between Walnut Avenue and Twin Cities Road, via Adare Way and Emerald Vista Drive.

Carillion Boulevard is a north–south roadway that bisects the northeast area of Galt, which is bounded by Hwy 99, Twin Cities Road, Marengo Road, and Simmerhorn Road. The roadway is a divided four-lane arterial with a posted speed limit of 45 mph.

Marengo Road is a two-lane north–south roadway that connects the arterials of Twin Cities Road and Simmerhorn Road within the City of Galt. The roadway has a posted speed limit of 45 MPH and provides access primarily to single family residential uses on the west, and agricultural uses to the east.

Historic Rancheria Site

Grant Line Road is a major north–south roadway that extends from Hwy 99 to White Rock Road in unincorporated Sacramento County. Between Disposal Lane and the Hwy 99 SB off-ramp intersection, Grant Line Road is a six-lane roadway with a posted speed limit of 55 mph. East of Disposal Lane, Grant Line Road becomes a two lane road with a posted speed limit of 35 MPH. The roadway is designated as an eight-lane arterial between Hwy 99 and Bradshaw Road and as a six-lane arterial east of Bradshaw Road. As part of the planned Capital SouthEast Connector Project, Grant Line Road will ultimately be widened to a six-lane configuration east of Hwy 99 to Bradshaw Road, and to a four-lane configuration from Bradshaw Road to Jackson Road.

Wilton Road is a northwest–southeast two-lane roadway that extends from Dillard Road to the south to Grant Line Road to the north. Wilton Road spans a total of approximately 3.2 miles and has a posted speed limit of 55 MPH.

Dillard Road is a two-lane roadway running northeast/southwest between Hwy 99 and Jackson Road. Dillard Road has a posted speed limit of 55 MPH and is bordered primarily by agricultural and very low density single family residential uses.

Mall Site

Grant Line Road – See above description.

Kammerer Road is an east–west road extending from Bruceville Road to West Stockton Boulevard. Kammerer Road is two lanes from just west of Lent Ranch Parkway to Bruceville Road. Kammerer Road is part of the Capital SouthEast Connector project and is designated in the City of Elk Grove General Plan as an eight-lane arterial from Hwy 99 to Lent Ranch Parkway and as a six-lane arterial from Lent Ranch Parkway to Franklin Boulevard. Planned improvement plans include widening to six lanes west to Bruceville Road and construction of a new four-lane Kammerer Road extension from Bruceville Road to I-5 (at Hood Franklin Interchange).

East Stockton Boulevard is a north–south roadway that extends from south of Grant Line Road to Elk Grove Boulevard where it turns into Emerald Vista Drive. East Stockton Boulevard has three lanes (two northbound and one southbound) for approximately 1,200 feet south of Elk Grove Boulevard and two lanes to the south.

Freeway Facilities

State Route 99 (Hwy 99) is the primary interregional route which serves the City of Galt and Elk Grove. The freeway passes through the San Joaquin Valley and Central Valley, running approximately parallel to Interstate 5 (I-5) between the City of Red Bluff and the City of Bakersfield. Major communities serviced by Hwy 99 include the Cities of Stockton, Sacramento, Modesto, Yuba City, Merced, and Fresno. The freeway is a major commuter and truck travel route. Hwy 99 is a four-lane freeway within the study area and forms interchanges with Walnut Avenue, Twin Cities Road (SR 104), Mingo Road, Arno Road, Dillard Road, Grant Line Road and Elk Grove Boulevard. Starting just south of Elk Grove Road and extending to the north, a single high-occupancy vehicle (HOV) lane is provided in each direction.

Freeway Ramps

- Hwy 99 and West Stockton Boulevard Southbound (SB) on-ramp is a one-lane hook ramp just south of SR-104.
- The Hwy 99 Northbound (NB) and East Stockton Boulevard off-ramp is a one-lane hook ramp just south of SR-104.
- The Hwy 99 NB on-ramp at East Stockton Boulevard is a one-lane hook ramp located just north of SR-104.
- The Hwy 99 SB on-ramp at West Stockton Boulevard is a one-lane hook ramp located just north of SR-104.
- The SR 99 SB off-ramp at West Stockton Boulevard is a one-lane hook ramp located just north of SR-104.
- The Hwy 99 SB off-ramp at West Stockton Boulevard and near Mingo Road is a one-lane ramp.
- Hwy 99 SB on-ramp at West Stockton Boulevard near Mingo Road is a one-lane ramp.
- The Hwy 99 NB off-ramp at Mingo Road and just east of Stockton Boulevard is a one-lane ramp.
- The Hwy 99 NB on-ramp at Mingo Road and just east of Stockton Boulevard is a one-lane ramp.
- The Hwy 99 NB off-ramp at Grant Line Road is a two-lane ramp that expands to three lanes as it nears its intersection with Grant Line Road.
- The Hwy 99 NB on-ramp at Grant Line Road is a two-lane loop ramp for those traveling eastbound along Grant Line Road and wishing to access Hwy 99. From the westbound direction along Grant Line Road, access to Hwy 99 is provided via a two-lane ramp. At each of these locations, one of the two on-ramps is designated as an HOV lane.
- The Hwy 99 SB off-ramp at Grant Line Road is a two-lane ramp that expands to three lanes approaching the intersection at Grant Line Road.

- The Hwy 99 SB on-ramp at Grant Line Road is a two-lane loop ramp for those traveling westbound along Grant Line Road and wishing to access Hwy 99. From the eastbound direction along Grant Line Road, access to Hwy 99 is provided via a two-lane ramp. Each of the SB on-ramps has one of the two lanes designated as an HOV lane.

3.8.2 LEVEL OF SERVICE STANDARDS

Traffic congestion is generally measured in terms of level of service (LOS). With the exception of roundabout locations, peak hour LOS at critical off-site and driveway intersections was determined using the methodology described in the 2000 Highway Capacity Manual (HCM; Transportation Research Board, 2000). In accordance with the manual intersections are rated between LOS A and F, with LOS A being free flow and LOS F being forced flow or over-capacity conditions. The LOS at intersections is measured in terms of average delay per vehicle in seconds. For unsignalized intersections, the LOS is determined by the worst approach at the intersection (i.e. the intersection leg with the most delay, usually the minor leg). For signalized intersections, the LOS is determined as an average delay for all the entering vehicles. Roundabout intersections were analyzed using SIDRA INTERSECTION software, as it is preferred over HCM methodologies for roundabout analysis. The LOS intersection criteria are listed in **Table 3.8-1**, roadway criteria in **Table 3.8-2**, and highway criteria in **Table 3.8-3**.

TABLE 3.8-1
INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Control Delay (Seconds Per Vehicle)	
	Unsignalized Intersections	Signalized Intersections
A	≤10	≤10
B	>10–15	>10–20
C	>15–25	>20–35
D	>25–35	>35–55
E	>35–50	>55–80
F	>50	>80
Source: **Appendix O** – Traffic Impact Study		

TABLE 3.8-2
ROADWAY LEVEL OF SERVICE CRITERIA

Facility Type – Number of Lanes	Maximum Vehicle Volume for Given Service Level				
	LOS A	LOS B	LOS C	LOS D	LOS E
Arterial, moderate access control – 2	10,800	12,600	14,400	16,200	18,000
Arterial, moderate access control – 4	21,600	25,200	28,800	32,400	36,000
Arterial, moderate access control - 6	32,400	37,800	43,200	48,600	54,000
Rural, 2-lane highway - 2	2,400	4,800	7,900	13,500	22,900
Rural, 2-lane road, 24'-36' pavement, no shoulders - 2	1,800	3,600	5,900	10,100	17,000
Arterial, moderate access control – 2	10,800	12,600	14,400	16,200	18,000
Source: **Appendix O** – Traffic Impact Study					

TABLE 3.8-3
HIGHWAY LEVEL OF SERVICE CRITERIA

Level of Service	Density (Passenger Cars per Mile per Lane)	
	Basic Segments	Ramp Merge/Diverge
A	≤11	≤10
B	>11–18	>10–20
C	>18–26	>20–28
D	>26–35	>28–35
E	>35–45	>35
F	>45 or V/C ratio > 1.00[1]	Demand exceeds capacity[2]

[1] V/C ratio = volume to capacity ratio
[2] Occurs when freeway demand exceeds upstream (diverge) or downstream (merge) freeway segment capacity, or if off-ramp demand exceeds off-ramp capacity.
Source: **Appendix O** – Traffic Impact Study

Consultation

A Traffic Impact Analysis (TIA) was conducted by Kimley-Horn to address the traffic and transportation effects of the proposed casino and hotel development. The TIA is provided as **Appendix O**. The results serve as a baseline from which the 2018 and 2035 year traffic volume projections are derived (**Section 4.8** and **Section 4.15**). The TIA was prepared based on discussions with, and criteria set forth by, the City of Galt, the City of Elk Grove, County of Sacramento and the California Department of Transportation (Caltrans) on topics including the selection of study roadways and freeway facilities, as well as the analysis methodology, procedures, and assumptions.

Intersections

Weekday roadway average daily traffic (ADT) volumes, weekday PM peak hour intersection turning movement volumes and Hwy 99 ramp volumes for locations within the City of Galt were provided by the City, as documented in a 2014 memo prepared by Omni-Means, Ltd consultants for the City's Eastview Specific Plan development project (**Appendix O**). As document within the memo provided by the City, due to on-going construction at the Twin Cities Road interchange, new traffic counts were not collected for study intersections #1, #2, and #3 (see below for numbered list of intersections). For those locations, the volumes provided by the City included adjustments applied to 2009 traffic to reflect regional and historical growth rates through year 2014. Weekday volumes for other intersections within Galt were collected by Omni-Means, Ltd for intersections during February 2014 (**Appendix O**). The existing weekday traffic volumes provided by the City of Galt did not reflect traffic added to the street network from the Galt Wal-Mart project, which opened in late spring 2014. Other existing conditions traffic data for the TIA was collected after the Galt Wal-Mart was completed and open for business. To demonstrate consistency throughout the existing traffic data and provide a generally conservative analysis, the existing weekday traffic volumes along Twin Cities Road within vicinity of the Wal-Mart site were adjusted to reflect the additional traffic added to the street network by the Wal-Mart project (**Appendix O**).

Traffic analyses evaluated the PM peak hour operational conditions of the following 19 study intersections:

1. Twin Cities Road/West Stockton Boulevard
2. Twin Cities Road (SR 104)/East Stockton Boulevard
3. Twin Cities Road (SR 104)/Fermoy Way
4. Twin Cities Road (SR 104)/Carillion Boulevard
5. Twin Cities Road (SR 104)/Marengo Road
6. Twin Cities Road (SR 104)/Cherokee Lane
7. Hwy 99 SB Ramps/West Stockton Boulevard (near Mingo Road)
8. Hwy 99 NB Ramps/East Stockton Boulevard/Mingo Road
9. Hwy 99 NB Ramps/Grant Line Road
10. Hwy 99 SB Ramps/Grant Line Road/Kammerer Road
11. Promenade Parkway/Kammerer Road
12. Promenade Parkway/Bilby Road
13. Grant Line Road/E Stockton Boulevard/Survey Road
14. Grant Line Road/Bond Road
15. Grant Line Road/Sheldon Road
16. Wilton Road/Green Road
17. Grant Line Road/Wilton Road
18. Wilton Road/Dillard Road
19. Wilton Road/Cosumnes Road

PM peak-hour traffic delays and LOS for study intersections listed above are shown in **Table 3.8-4**.

Roadways

The following 10 roadway segments were selected for evaluation and confirmed with city/county/Caltrans staff for inclusion in the TIA:

1. Twin Cities Road (SR 104) (Fermoy Way to Merango Road)
2. Twin Cities Road (west of Hwy 99)
3. East Stockton Boulevard (between Hwy 99 NB on-ramp and Mingo Road)
4. West Stockton Boulevard (between Hwy 99 SB off-ramp and Hwy 99 SB ramps near Mingo Road)
5. Promenade Parkway (between Whitelock Parkway and Kammerer Road)
6. Kammerer Road (between Bruceville Road and Hwy 99)
7. Grant Line Road (between Hwy 99 and Jackson Road)
8. Dillard Road (between Hwy 99 and Wilton Road)

9. Wilton Road (between Grant Line Road and Dillard Road)
10. Green Road (between Wilton Road and Dillard Road)

Roadways segments are analyzed based on daily roadway traffic volumes and capacity thresholds, shown in **Table 3.8-5**.

TABLE 3.8-4
INTERSECTION PM AND SATURDAY PEAK HOUR CONDITIONS

Intersections	LOS Target	PM Peak Traffic		Saturday PM Peak Traffic	
		LOS	Delay (sec)	LOS	Delay (sec)
W Stockton Blvd/Twin Cities Rd	E	A	9.1	A	9.1
E Stockton Blvd/Twin Cities Rd	E	A	7.5	A	5.6
Twin Cities Rd/Fermoy Way	E	B	12.3	A	9.7
Twin Cities Rd/Carillon Blvd	E	B	11.6	A	8.7
Twin Cities Rd/Marengo Rd	E	A	9.8	A	9.0
Twin Cities Rd/Cherokee Ln	E	B	12.6	B	11.9
W Stockton Blvd/Hwy 99 SB Ramps (at Mingo Rd)	D	A	8.6	A	8.7
E Stockton Blvd/Hwy 99 NB Ramps (at Mingo Rd)	D	A	9.1	A	9.0
Hwy 99 NB Ramps/Grant Line Rd	D	A	9.0	A	6.5
Hwy 99 SB Ramps/Grant Line Rd	D	B	13.0	A	7.7
Promenade Parkway/Kammerer Rd	D	B	19.0	B	15.2
Promenade Parkway/Bilby Rd	D	A	7.7	A	1.5
Grant Line Rd/E Stockton Blvd	D	D	42.2	C	25.2
Grant Line Rd/Bond Rd	D	C	21.5	B	17.5
Grant Line Rd/Sheldon Rd	D	**E**	**45.7**	B	12.0
Wilton Rd/Green Rd	D	B	10.9	A	8.7
Grant Line Rd/Wilton Rd	D	D	41.4	C	21.5
Wilton Rd/Dillard Rd	D	A	8.0	A	7.4
Wilton Rd/Cosumnes Rd	D	B	15.0	B	11.7
Green Road/Project Driveway 1	-	-	-	-	-
Green Road/Project Driveway 2	-	-	-	-	-
Green Road/Project Driveway 3	-	-	-	-	-

Note: Bolded text indicated failure to meet current LOS target.
Source: **Appendix O** – Traffic Impact Study

Freeway Facilities

The following 8 freeway mainline segments and 13 ramps were selected for evaluation in the TIA and confirmed with city/county/Caltrans staff:

TABLE 3.8-5
ROADWAY SEGMENT CONDITIONS

Roadway	Segment Extents	Target LOS	Number of Lanes	Weekday		Saturday	
				ADT	LOS	ADT	LOS
Twin Cities Road (SR-104)	Fermoy Way to Merango Rd	D	2	15,942	D	9,074	A
Twin Cities Road	West of Hwy 99	D	2	5,060	A	2,880	A
East Stockton Boulevard	Hwy 99 NB on-ramp to Mingo Rd	D	2	463	A	519	A
West Stockton Boulevard	Hwy 99 SB off-ramp to Hwy 99 SB ramps near Mingo Road	D	2	93	A	141	A
Promenade Parkway	Kammerer Rd to Bilby Rd	D	6	4,098	A	2,219	A
	Bilby Rd to Kyler Rd	D	4	4,098	A	2,219	A
	Kyler Rd to Whitelock Pkwy	D	2	4,098	A	2,219	A
Kammerer Road	Bruceville Rd to Lent Ranch Pkwy	D	2	6,027	C	5,197	C
	Lent Ranch Parkway to Hwy 99	D	6	6,027	A	5,197	A
Grant Line Road	Hwy 99 to East Stockton Blvd/Survey Rd	D	6	19,907	A	15,228	A
	East Stockton Blvd/Survey Rd to Waterman Rd	D	2	**19,907**	**F**	15,228	D
	Waterman Rd to Bradshaw Rd	D	2	**19,907**	**F**	15,228	D
	Bradshaw Rd to Wilton Rd	D	2	**16,460**	**E**	12,700	C
	Wilton Rd to Calvine Rd	D	2	**18,029**	**F**	13,541	C
	Calvine Rd to Jackson Rd	D	2	**18,029**	**F**	13,541	C
Dillard Road	Hwy 99 to Wilton Rd	D	2	4,576	C	3,507	B
Wilton Road	Grant Line Rd to Green Rd	D	2	9,985	D	8,338	D
	Green Rd to Dillard Rd	D	2	3,811	C	3,309	B
Green Road	Wilton Rd to Project Alternative D/E access road	D	2	4,090	C	3,719	C
	Project Alternative D/E access road to Dillard Rd	D	2	2,069	B	2,057	B

Note: ADT = average daily traffic
Source: **Appendix O** – Traffic Impact Study

Mainline Segments:

1. Mainline Hwy 99 between Ayers Lane and Walnut Avenue (NB and SB)
2. Mainline Hwy 99 between Walnut Avenue and Twin Cities Road (NB and SB)
3. Mainline Hwy 99 between Twin Cities Road and Mingo Road (NB and SB)
4. Mainline Hwy 99 between Mingo Road and Arno Road (NB and SB)
5. Mainline Hwy 99 between Arno Road and Dillard Road (NB and SB)
6. Mainline Hwy 99 between Dillard Road and Grant Line Road (NB and SB)
7. Mainline Hwy 99 between Grant Line Road and Elk Grove Boulevard (NB and SB)
8. Mainline Hwy 99 between Elk Grove Boulevard and Bond Road (NB and SB)

Ramps:

1. West Stockton Boulevard/Hwy 99 SB Off-Ramp
2. West Stockton Boulevard/Hwy 99 SB On-Ramp (northside)
3. West Stockton Boulevard/Hwy 99 SB On-Ramp (southside)
4. East Stockton Boulevard/Hwy 99 NB Off-Ramp
5. East Stockton Boulevard/Hwy 99 NB On-Ramp
6. West Stockton Boulevard/Hwy 99 SB Off-Ramp (near Mingo Road)
7. West Stockton Boulevard/Hwy 99 SB On-Ramp (near Mingo Road)
8. East Stockton Boulevard/Mingo Road/Hwy 99 NB Off-Ramp
9. East Stockton Boulevard/Mingo Road/Hwy 99 NB On-Ramp
10. Grant Line Road/Hwy 99 NB Off-Ramp
11. Grant Line Road/Hwy 99 NB On-Ramp (WB Right)
12. Grant Line Road/Hwy 99 NB On-Ramp (EB Loop)
13. Grant Line Road/Hwy 99 SB Off-Ramp
14. Grant Line Road/Hwy 99 SB On-Ramp (WB Loop)
15. Grant Line Road/Hwy 99 SB On-Ramp (EB Right)

Freeway facilities are analyzed for Weekday PM and Saturday PM peak hour conditions; mainline conditions are shown in **Table 3.8-6** and ramp conditions are shown in **Table 3.8-7**.

3.8.3 TRANSIT SERVICES

Twin Cities Site

Transit service within the City of Galt includes four "Dial-A-Ride" bus routes that operate from 7:00 AM to 6:30 PM, Monday through Friday. In the vicinity of the Twin Cities project study area, South County Transit (SCT/LINK) Route 3 travels between Lakepark Senior Center and Galt City Hall via Twin Cities Road, Fermoy Way, East Stockton Boulevard, and North Lincoln Way. SCT/LINK offers service along the Hwy 99 corridor by providing direct intercity service connecting Galt with the Cities of Lodi, Elk Grove and Sacramento. The Hwy 99 Route operates Monday through Friday, with hourly service all day from 5:20 am to 7:20 pm (**Appendix O**). Service in the City of Lodi SCT/LINK now offers direct bus service from the Delta to Lodi. This route also provides direct service to Galt with connecting service via Hwy 99 to Elk Grove and Sacramento. Additionally, SCT/LINK operates a Dial-a-Ride system that provides curb-to-curb service that requires advance reservations.

TABLE 3.8-6
FREEWAY MAINLINE CONDITIONS

Hwy 99 Segment	Number of Lanes	Target LOS	Weekday			Saturday		
			PM Peak Hour Volume	LOS	Density (pc/mi/ln)[1]	PM Peak Hour Volume	LOS	Density (pc/mi/ln)
NORTHBOUND								
Between Ayers Lane and Walnut Avenue	2	D	2,580	C	23.1	1,954	B	17.5
Between Walnut Avenue and Twin Cities Road	2	D	2,434	C	21.8	1,954	B	17.5
Between Twin Cities Road and Mingo Road	2	D	2,534	C	22.7	1,964	B	17.6
Between Mingo Road and Arno Road	2	D	2,537	C	22.7	1,967	B	17.6
Between Arno Road and Dillard Road	2	D	2,513	C	22.5	1,943	B	17.4
Between Dillard Road and Grant Line Road	2	D	2,467	C	22.1	2,143	C	19.2
Between Grant Line Road and Elk Grove Boulevard	2	D	2,160	C	19.3	1,969	B	17.6
Between Elk Grove Boulevard and Bond Road[1]	2	D	2,198	C	19.7	1,897	B	17.0
SOUTHBOUND								
Between Ayers Lane and Walnut Avenue	2	D	2,541	C	22.8	2,113	C	18.9
Between Walnut Avenue and Twin Cities Road	2	D	2,581	C	23.1	2,081	C	18.6
Between Twin Cities Road and Mingo Road	2	D	2,816	C	25.5	2,219	C	19.8
Between Mingo Road and Arno Road	2	D	2,821	C	25.6	2,224	C	19.9
Between Arno Road and Dillard Road	2	D	2,853	C	25.9	2,256	C	20.2
Between Dillard Road and Eschinger Road	2	D	2,708	C	24.4	2,314	C	20.7
Between Eschinger Road and Grant Line Road	2	D	2,708	C	24.4	2,314	C	20.7
Between Grant Line Road and Elk Grove Boulevard	2	D	2,290	C	20.5	2,149	C	19.2
Between Elk Grove Boulevard and Bond Road[1]	2	D	2,548	C	22.8	1,400	B	12.5

Notes: [1]pc/mi/ln = passenger cars per mile per lane
Source: **Appendix O** – Traffic Impact Study

TABLE 3.8-7
FREEWAY RAMP CONDITIONS

Interchange Location	Target LOS	Junction Type	Weekday PM Peak Hour		Saturday Peak Hour	
			Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Hwy 99 Ramps at Twin Cities Road						
West Stockton Boulevard/Hwy 99 SB Off-Ramp	D	Diverge	29.4	D	23.5	C
West Stockton Boulevard/Hwy 99 SB On-Ramp (north)	D	Merge	24.4	C	20.0	C
West Stockton Boulevard/Hwy 99 SB On-Ramp (south)	D	Merge	25.7	C	21.1	C
East Stockton Boulevard/Hwy 99 NB Off-Ramp	D	Diverge	25.6	C	20.8	C
East Stockton Boulevard/Hwy 99 NB On-Ramp	D	Merge	25.3	C	20.2	C
Hwy 99 Ramps at Mingo Road						
West Stockton Boulevard/Hwy 99 SB Off-Ramp	D	Diverge	28.0	C	22.0	C
West Stockton Boulevard/Hwy 99 SB On-Ramp	D	Merge	30.1	D	24.7	C
East Stockton Boulevard/Hwy 99 NB Off-Ramp	D	Diverge	25.3	C	19.5	B
East Stockton Boulevard/Hwy 99 NB On-Ramp	D	Merge	27.5	C	22.4	C
Hwy 99 Ramps at Grant Line Road						
Hwy 99 NB Off-Ramp	D	Diverge	<5	A	<5	A
Hwy 99 NB On-Ramp (WB Right)	D	Merge	16.3	B	14.7	B
Hwy 99 NB On-Ramp (EB Loop)	D	Merge	15.5	B	14.9	B
Hwy 99 SB Off-Ramp	D	Diverge	<5	A	<5	A
Hwy 99 SB On-Ramp (WB Loop)	D	Merge	21.3	C	18.6	B
Hwy 99 SB On-Ramp (EB Right)	D	Merge	22.7	C	19.2	B

Source: **Appendix O** – Traffic Impact Study

Historic Rancheria Site

There are no existing transit services that extend to the Historic Rancheria site.

Mall Site

The City of Elk Grove operates fixed-route bus service (e-tran) in the vicinity of the project study area. Kammerer Road and the southern portion of Grant Line Road are not served by any stops, although numerous transit routes and stops are located west of and in close proximity to Grant Line Road. The routes that run closest to the Mall site included those along East Stockton Boulevard (routes 60 and 162), Elk Grove Florin (routes 57, 59, 60 and 162), and Elkmont Way (routes 60 and 162) (**Appendix O**). A number of these services operate only during the peak hours or have lengthy headways. No existing transit services currently extend directly to the Mall site.

3.8.4 BICYCLE AND PEDESTRIAN FACILITIES

Twin Cities Site

Currently no pedestrian or bicycle facilities exist in the vicinity of the Twin Cities site. The closest pedestrian facilities are located south of the project area where West Stockton Boulevard intersects with Twin Cities Road. The current City of Galt General Plan Circulation Element states that sidewalks are required of all new development in Galt.

Historic Rancheria Site

There are no existing pedestrian or bicycle facilities in the vicinity of the Historic Rancheria site.

Mall Site

In the immediate vicinity of the Elk Grove Mall site, Class II (on-street bike lanes with signing and striping) exist on several major roadways. For the entirety of its length, Promenade Parkway has Class II bike lanes serving both directions of travel (north and south). Similarly, Class II bike lanes are located on either side of Kammerer Road from just west of Promenade Parkway to just east of Survey Road. Additionally, Class II bike lanes are provided on Elk Grove Florin Road, and along portions of Elk Grove Boulevard and East Stockton Boulevard (**Appendix O**). Bicycle facilities do not exist along many of the roadways surrounding the study area due to the industrial nature of the area.

The majority of local roads in the immediate vicinity of the Mall site provide pedestrian facilities including sidewalks and crosswalks at signalized intersections. Promenade Parkway and Kammerer Road/Grant Line Road between Promenade Parkway and Survey Road provide sidewalks and crosswalks at signalized intersections. In general, sidewalks are provided within the study area along most developed properties and crosswalks at signalized intersections.

3.8.5 PAVEMENT CONDITION INDEX

Sacramento County Standards

The County's Pavement Management System (PMS) assists the County in evaluating, tracking and ranking pavement conditions based on field inspections. The frequency of roadway inspection ranges from annually to once every three years depending on the type of roadway.

Detailed field inspections categorize and quantify pavement deficiencies such as cracks, patches, and utility trench cuts. These deficiencies are entered into the PMS program that calculates a Pavement Condition Index (PCI) for each roadway. PCI values range from zero (very poor) to 100 (excellent). Roadways receive periodic surface treatments that extend the roadway life and provide a new riding surface. Surface treatments include asphalt overlays, slurry seals, and chip seals, The type of surface treatment is based on the PCI, the type of roadway (urban, rural, residential, thoroughfare, etc.), the amount of traffic, the type of traffic (e.g., trucks, cars, etc.), and other engineering factors (Sacramento County, 2015).

PCI on Study Area Roadways

The following list provides the PCI of study area roadways that may not support additional traffic generated by the project:

- West Stockton from Twin Cities Road to its north end: PCI of 20
- East Stockton from Twin Cities Road to Mingo Road: PCI of 20
- Dillard Road from Hwy 99 to Green Road: PCI of 61-97 without paved shoulders
- Green Road from Wilton Road to Dillard Road: PCI of 20-83 without paved shoulders

3.9 LAND USE

This section contains a discussion of the existing land uses for the Twin Cities, Historic Rancheria, and Elk Grove Mall sites. The general and site-specific description of land use contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.9**.

3.9.1 TWIN CITIES SITE – ALTERNATIVES A, B, AND C

Guidance Documents

The Twin Cities site is located in southern unincorporated Sacramento County (County) within the northern portion of the Sphere of Influence (SOI) area of the City of Galt (City). Due to its location within the SOI, the City has prepared planning documents for potential future annexation of the Twin Cities site and surrounding parcels. Current land use planning responsibility falls to the County. However, the County would typically give consideration of the City's land use designation for any potential development of these parcels. Land use planning documents developed for the Twin Cities site are guided in part by the County General Plan (County GP), the County Zoning Code (County Code), the City General Plan (City GP), and the City Zoning Code (City Code).

Sacramento County General Plan

The central purpose of the 2011 County GP is to "guide growth and development within the unincorporated County over the next 20 years" (Sacramento County, 2011). The County GP contains 14 elements, including a Land Use element, which individually and collectively influences the County's future development. The Land Use Policy map describes what type of new land uses are desired or whether existing open lands will be retained for agriculture, habitat, or other uses. In some areas, the Land Use Policy Map shows future uses, which differ from existing land uses. The Land Use Policy Map portrays the ultimate uses of land in and around the community through land use designations.

Sacramento County Zoning Code

The County Code specifies immediate uses for land and is the primary instrument for implementing County GP policies, including those found in the Land Use Element. Zoning is adopted by ordinance and carries the weight of local law. The County Code regulates the use, placement, spacing, size, and nature of buildings and parcels of land in order to promote orderly development. The Zoning Code provides information on the permitted uses in each zone, as well as development standards for the use of property, which address minimum lot size, setbacks, height limitations, parking, signage, and landscaping (Sacramento County, 2011). A description of the applicable County Zoning designations for the Twin Cities site and vicinity are described below.

Agricultural-Residential

The Agricultural-Residential designation provides for rural residential uses, such as animal husbandry, small-scale agriculture, and other limited agricultural activities. This designation is typical of established rural communities where between one and ten acres per unit is allowed, resulting in a development density of 2.5 to 0.25 persons per acre.

Agricultural Cropland

This designation represents agricultural lands most suitable for intensive agriculture. The agricultural activities included are row crops, tree crops, irrigated grains and dairies. The designation is generally limited to areas where soils are rated from Class I to Class IV by the Soil Conservation Service, or are classified as having Prime, Statewide, or Unique significance by the State of California Conservation Department.

These lands have at least some of the following attributes: deep to moderately deep soils, abundant to ample water supply, distinguishable geographic boundaries, absence of incompatible residential uses, absence of topographical constraints, good to excellent crop yields, and large to moderate sized farm units. These attributes indicate the need for ambitious preservation policies and techniques. The Agricultural Cropland designation allows single family dwelling units at a density of no greater than 40 acres per unit.

General Agriculture (20 acres)

This designation identifies land that is generally suitable for agricultural production with the specific intent to provide an opportunity for starter farms or large hobby farms. Much of the land in this category is classified as "statewide in significance," with soils generally in the class III and IV range. Approximately 30% of the land in this category is primarily suitable for grazing. The General Agriculture (20 acres) designation allows single family dwelling units at a density no greater than 20 acres per unit. Uses other than agricultural production are not permitted.

Commercial and Offices

The Commercial and Office designation provides for a full range of neighborhood, community, and regional shopping centers and a variety of business and professional offices. Uses include locally-oriented retail, professional offices, and regional commercial operations. The location and size of commercial areas is based upon accessibility, historic development patterns, community and neighborhood needs, and minimization of land use conflicts. Ideally, commercial areas are designed to integrate with the community, including provisions for pedestrian amenities. The standard for commercial Floor Area Ratios is between 0.25 and 2.5.

Public/Quasi-Public

The Public/Quasi-Public designation establishes areas for uses such as education, solid and liquid waste disposal, and cemeteries. This designation identifies public and quasi-public areas that are of significant size, under County jurisdiction, regional in scope, specified by State law, or have significant land use impacts. Some facilities (e.g. elementary schools and fire stations) are too small or numerous to show on the Land Use Diagram, but may be identified on other diagrams in the Plan.

Industrial Intensive

This land use designation allows for manufacturing and related activities including research, processing, warehousing, and supporting commercial uses, the intensive nature of which require urban services. Industrial Intensive areas are located within the urban portion of the county and receive an urban level of public infrastructure and services. Floor Area Ratios range from 0.15 to 0.80

Natural Preserve

The purpose of this designation is to identify critical natural habitat for priority resource protection. The designation includes riparian Valley Oak woodland and permanent or seasonal marshes with outstanding wildlife value, the extent of which has declined greatly throughout the Central Valley during the 20th Century. This designation shows Natural Preserve on both public and privately owned land. Preserve boundaries do not include intensively farmed areas.

Sacramento County Land Use Strategies and Policies

The County's land use strategy contains objectives and policies that are intended to guide the County toward a more compact urban character by concentrating growth within existing urbanized areas and strategically-located new growth areas, thereby utilizing land resources as efficiently as possible. **Table 3.9-1** depicts the County's GP strategies and policies applicable to the Twin Cities site.

City of Galt General Plan

Similar to the County GP, the central purpose of the City GP is to sets out a long-term vision for the City's growth and outlines policies, standards, and programs to guide day-to-day decisions concerning the City's development through the year 2030. The City Council adopted the City GP on April 7, 2009. The City GP consists of ten elements, including a Community Character element and a Land Use Element, which contains Land Use Maps (City of Galt, 2009a)

City of Galt Zoning Code

As with the County Code, the purpose of the City Code is to regulate the use of land, buildings, or other structures for residences, commerce, industry, and other uses required by the community. Additionally, the City Code regulates the location, height, and size of buildings, structures, yards, courts, and open spaces, as well as the amount of building coverage permitted in each zone and each zone's population

TABLE 3.9-1
SACRAMENTO COUNTY APPLICABLE GENERAL PLAN STRATEGIES AND POLCIES

Policies	Sacramento County Planning Polices
LU-11	It is the intent of the County to comprehensively plan for the revitalization of the targeted commercial corridors and invest the resources necessary to achieve the following: stimulate private investment; encourage development of vacant and underutilized parcels; support reuse and/or rehabilitation of abandoned or blighted buildings; encourage rezoning of excess industrial and commercial lands to allow for medium and high density residential or mixed use projects, and; avoid non-transit supportive uses, such as industrial uses, low density residential, and uses that would necessitate large parking lots fronting on the street.
LU-15	Planning and development of new growth areas should be consistent with Sacramento County-adopted Habitat Conservation Plans and other efforts to preserve and protect natural resources.
LU-17	Support implementation of the design review program on a project-by-project basis to ensure that all development applications positively contribute to the immediate neighborhood and the surrounding community.
LU-18	Encourage development that complements the aesthetic style and character of existing development nearby to help build a cohesive identity for the area.
LU-19	Incompatible urban land uses should be buffered from one another by methods that retain community character and do not consume large land areas or create pedestrian barriers.
LU-20	Planning processes for existing communities, commercial corridors and new growth areas shall provide for distinct and identifying physical elements, which may include: gateways, signage, public art, common site or street layout, shared design qualities of buildings or infrastructure, or prominent landmarks or destinations.
LU-24	Support private development requests that propose pedestrian- and transit-friendly mixed use projects in commercial corridors, town centers, and near existing or proposed transit stops.
LU-31	Strive to achieve a natural nighttime environment and an uncompromised public view of the night sky by reducing light pollution.
LU-46	Assure that regionally-oriented commercial and office uses and employment concentrations have adequate road access, high frequency transit service and an adequate but efficient supply of parking.
LU-48	Discourage the establishment and build-out of linear, strip pattern commercial centers.
LU-49	Discourage the creation of excessive amounts of retail shopping facilities.
LU-102	Ensure that the structural design, aesthetics, and site layout of new developments is compatible and interconnected with existing development.
Source: Sacramento County, 2011	

density. The Ordinance also divides the City into zones of such shape, size, and number best suited to carry out these regulations, provide for their enforcement, and ensure the provision of adequate open space for aesthetic and environmental amenities (City of Galt, 2009a). A description of City land use designations applicable to the Twin Cities site and vicinity is described below.

Commercial

This designation provides primarily for regional, neighborhood, and locally-oriented retail and service uses, restaurants, banks, entertainment uses, public and quasi-public uses, and similar and compatible uses. This use is typically located downtown and in areas of good visibility, such as arterials or major intersections (City of Galt, 2009a).

Industrial

This designation provides for research and development, warehouses, and manufacturing, and quasi-public uses. This use is typically located away from residential uses and in the immediate vicinity of State Route 99 and/or the Union Pacific mainline railroad tracks (City of Galt, 2009a).

Office Professional

This designation provides for office parks, office buildings, and quasi-public uses. This use is typically located on arterial and collector streets and in downtown if it is in scale with existing buildings (City of Galt, 2009a).

Public/Quasi-Public

This designation provides for public facilities such as schools, fire stations, hospitals, sanitariums, libraries, museums, government offices and courts, churches, meeting halls, cemeteries and mausoleums, public facilities, and similar and compatible uses. This use is typically located throughout the community (City of Galt, 2009a).

Rural Residential

Rural Residential provides for single family detached homes and secondary residential units on two acre minimum lots without full urban services and with limited agricultural uses. This use is in the Planning Area but outside of the 2007 city limits. This use is typically located on the far western and northern parts of the Planning Area to provide transition between urban and rural uses (City of Galt, 2009a).

City of Galt Land Use Strategies and Policies

The goal and policies of the City's Land Use designations set standards for future development in the City, focusing on high-quality; orderly growth to achieve desired residential, commercial, and employment development. **Table 3.9-2** depicts the City's GP strategies and policies that may be applicable to the Twin Cities site due to its location within the City SOI area.

Regional and Local Setting

The Twin Cities site is located immediately west of a major transportation corridor, California State Route 99, commonly known as Highway 99. Highway 99 generally runs north-south and extends approximately 425 miles within the Central Valley of California. The Twin Cities site is bounded by West Stockton Boulevard, a two-lane rural country road running in a general north-south direction paralleling Highway 99, and Highway 99 on the east. West Stockton Boulevard terminates in the middle of the eastern portion of the Twin Cities site and runs approximately 2.3 miles south to its intersection with Twin Cities Road. The Twin Cities site is bounded on the south by private properties and Twin Cities Road, a Union Pacific Railroad on the west, and private property and Laguna Creek on the north. Historically, the Twin Cities site has been utilized for agricultural and rural residential uses.

TABLE 3.9-2
CITY OF GALT APPLICABLE GENERAL PLAN STRATEGIES AND POLICIES

Policies	City of Galt Planning Polices
LU-1.2: Proposed Development Consistency	The City shall review development proposals in detail for consistency with GP policies.
LU-1.3: Annexation Areas	When considering annexations and specific plans, the City should ensure that the boundaries of proposed annexation areas are reasonable and logical and that "islands or peninsulas" of land are not created.
LU-1.6: Orderly Growth	The City shall ensure that development occurs in an orderly sequence based on the logical and practical extension of public facilities and services.
LU-1.7: Fiscal Balance	The City shall designate land for development consistent with the needs of the community and consistent with its efforts to maintain a positive fiscal balance for the City.
LU-1.10 South Sacramento County Habitat Conservation Plan	The City shall coordinate habitat preservation efforts with Sacramento County to maintain critical species habitat preservation zoning on open space north of the Planning Area and within the proposed South Sacramento County Habitat Conservation Plan.
LU-1.12: Fair Share Capital Costs on New Development	The City shall require new development to pay its fair share of capital costs for necessary infrastructure improvements.
LU-1.13: Zoning Consistency	The City shall ensure that the Zoning Ordinance and Zoning Map are consistent with the General Plan.
LU-2.1: Design for Safety	The City shall require good design as a means to promote public safety.
LU-2.3: Smart Growth Principles and Sustainable Land Use Practices	Smart growth principles and sustainable land use practices (Low Impact Development) shall be incorporated into development project proposals, to the extent possible, including, but not limited to, mixed use developments, energy and environmental conservation, use of renewable energy sources, building orientation to maximize solar and wind power opportunities, minimizing permeable surfaces to reduce/treat stormwater, and maximizing walking and biking connections within neighborhoods and to outside activity areas. Projects that impede or obstruct pedestrian or bicycle access in the community shall be prohibited. The City should also encourage coordination with the Sacramento Area Council of Governments and the Blueprint principles on new planned unit developments and specific plans.
LU-2.4: Site Design	The City shall require the use of durable and aesthetically pleasing building materials and encourage pedestrian-oriented design with attractive open space to enhance living and working areas.
LU-6.1: Regional Commercial Areas	The City should designate areas of the city best suited for regional commercial uses. The intent is to create convenient and desirable conditions for regional retail customers and employees, to increase economic benefits, and to ensure separation of incompatible uses.
LU-7.1: Office Professional Development	The City should designate areas of the city best suited for office professional uses. The intent of this designation is to create convenient and desirable workplaces close to commercial and service amenities. This use can also provide a good transition between regional commercial and residential uses.
LU-8.1: Industrial Designation	The City should designate areas of the City best suited for industrial uses. The intent of this designation is to promote opportunities for manufacturing, distribution, and warehousing. These areas will create economic benefits, employment, and ensure separation of incompatible uses by clearly delineating concentrated areas of industrial use.

LU-8.5: Refuse Transfer Station	The City should coordinate efforts with the refuse service provider to locate a new refuse transfer station along the railroad tracks, north of Twin Cities Road.
LU-9.1: Greenbelt	The City should participate in regional efforts to establish a permanent agriculture, open space, and wildlife habitat greenbelt between the northern boundary of the Planning Area and the City of Elk Grove.
LU-9.2: Agricultural-Residential Uses	The City shall strongly encourage Sacramento County to deny the subdivision of agricultural land near Galt for agricultural-residential uses at a minimum lot size of less than two acres west of the 2007 city limits and less than five acres east/north of the 2007 city limits.
LU-10.1: Environmental Justice	The City shall ensure the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of land use and environmental laws, regulations, and policies. The City shall ensure that no part of the community suffers disproportionately from adverse human health or environmental effects, and all people live in clean, healthy, and sustainable communities.
C-1.3: Levels of Service	The City should develop and manage its roadway system to maintain LOS “E” on all streets and intersections within a quarter-mile of State Route 99, along A Street and C Street between State Route 99 to the railroad tracks, and along Lincoln Way between Pringle Avenue to Meladee Lane. The City should develop a LOS “D” or better on all other streets and intersections.
C-1.9: Traffic Impact Analysis and Funding	The City shall require an analysis of the effects of traffic from proposed major development projects. Each such project shall construct or fund improvements necessary to mitigate the effects of traffic from the project.
C-3.2: New Developments	The City should consider the effects of new development on local streets in residential areas and require new development to mitigate significant impacts on residential neighborhoods.
CC-1.11: Outdoor Lighting	The City shall ensure that future development includes provisions for the design of outdoor light fixtures to be directed/shielded downward and screened to avoid nighttime lighting spillover effects on adjacent land uses and nighttime sky conditions.
COS-2.2: Wetland and Riparian Communities Management	The City shall support the protection, restoration, expansion, and management of wetland and riparian plant communities for passive recreation, groundwater recharge, and wildlife habitat.
COS-2.9: Minimize Lighting Impacts	The City should ensure that lighting associated with new development or facilities (including street lighting, recreational facilities, and parking) shall be designed to prevent artificial lighting from illuminating adjacent natural areas at a level greater than one foot candle above ambient conditions.
COS-5.1: Vehicle Emission Reduction Programs	The City should support land use, transportation management, infrastructure, and environmental planning programs that reduce vehicle emissions and improve air quality.
PFS-1.2: Availability of Facilities and Services	The City should direct urban development to avoid scattered major new construction activities to minimize the cost of providing new public facilities and services. The City shall not approve new development where existing facilities are inadequate unless the following conditions are met: a. The applicant can demonstrate that all necessary public facilities will be installed or adequately financed (through fees or other means) in a timely fashion; and b. The facility improvements are consistent with applicable master or facility plans adopted by the City.
PFS-1.4: Financing from New Development	The City shall require development proposals to include plans for development and financing of public facilities and services.
PFS-1.9: Fair Share Costs on New Developments	The City shall require that new development pay its fair share of the cost of providing new public services and/or the costs of expanding/upgrading existing facilities and services impacted by the new development.

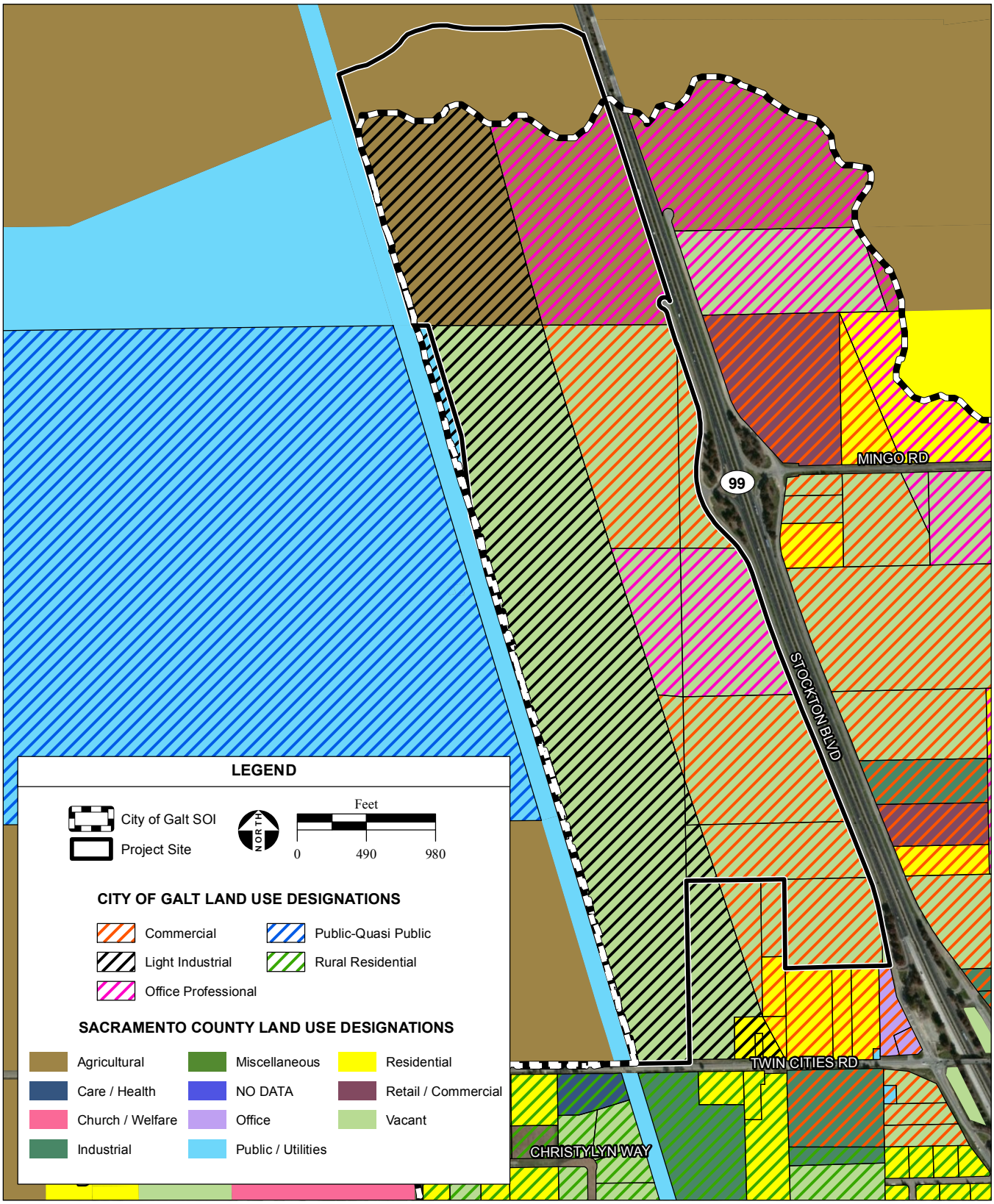
PFS-2.2: Groundwater Protection	The City should protect the groundwater basin from overdraft from city use of groundwater. To this end, the City shall study, working closely with other public and private entities as deemed appropriate, the safe yield of the groundwater basin. Water management programs such as conjunctive use and recharge programs should also be considered. The City should use this information to determine the most appropriate long-term water supply to serve Galt.
PFS-2.3: Surface Water Protection	The City shall protect surface water resources, including rivers, creeks, streams, sloughs, and marshes, from development impacts.
PFS-2.12: Fire Protection	The City shall ensure adequate water pressure throughout the city limits for fire protection purposes.
PFS-3.4: Sewage Treatment	The City shall oppose urban development within the sphere of influence which is not sewered and shall oppose the use of "package treatment plants". Urban development should be considered as less than 2 acre parcels on the west side of the Planning Area and less than 5 acre parcels on the north and east side of the Planning Area.
PFS-3.9: Expand Use of Reclaimed Water	The City shall encourage the use of tertiary treated wastewater for irrigation of agricultural lands, large landscaped areas, and recreation/open space areas within close proximity to the City's WWTP to help ensure ongoing compliance with RWQCB requirements.
PFS-6.4: Reducing Crime Through Site Design	The City shall require developers to incorporate best available practices in residential and nonresidential site plan design and construction using principles of Crime Prevention through environmental design, Safescape, eyes-on-the-street design techniques, and related programs in order to minimize criminal activities including vandalism, graffiti, and burglary.
PFS-6.5: Police Facility Funding	The City shall require new development to develop or fund police facilities, equipment, and personnel that, at a minimum, financially support standards identified in Policy PFS-6.4.
Source: City of Galt, 2009	

Twin Cities Site and Vicinity Land Use

The approximately 282-acre Twin Cities site is currently developed with agricultural operations, a single family residence, and the remnants of a historic nursery facility. A majority of land uses surrounding the Twin Cities site consists of rural residential, agricultural, and open space. The City's wastewater treatment plant (WWTP) is located approximately 0.3 miles west of the Twin Cities site. Mustang Airport, a privately owned airport with one runway and no commercial service, is located approximately 1.9 miles northeast of the Twin Cities site. Undeveloped open space and agricultural lands are located beyond the WWTP to the west of the Twin Cities site for approximately 2.45 miles, ending at the Cosumnes River. The nearest airstrips to the Twin Cities site are Mustang Airport, approximately two miles to the northeast, and Bottimore Ranch Airport, approximately four miles to the east.

Sacramento County Land Use Designation

As shown in **Figure 3.9-1**, the Twin Cities site is designated by the County as Agricultural-Residential (1-10 ac/du) and Agriculture Crop land. Surrounding land uses to the west include the City's WWTP, (zoned by the City as Public/Utilities), and lands designated as Agricultural Cropland. Land use to the north of the Twin Cities site is designated Agricultural Cropland, while land use designations east of the site are Agricultural Residential (1-10ac/du), Intensive Industrial, and General Agriculture (20 ac). Land uses to the south are designated Agricultural-Residential (1-10 ac/du) and Commercial and Office (Sacramento County, 2011). A description of County land use designations is found in **Section 3.9.1.**



SOURCE: Sacramento County General Plan 6/2010; City of Galt General Plan, 4/2009; AES, 2014

Figure 3.9-1
City of Galt and Sacramento County Land Use Designations for the Twin Cities Site

City of Galt Land Use Designation

As shown in **Figure 3.9-1**, the Twin Cities site is designated by the City as Light Industrial, Commercial, and Office Professional. Surrounding land use to the west, including the City's WWTP, is designated Public/Quasi-Public. Land uses to the east of the Twin Cities site are designated Office Professional, Commercial, and Public/Quasi-Public. Furthermore, land uses to the south of the Twin Cities site include Public-Quasi Public, Rural Residential, and Commercial (City of Galt, 2009a). A description of City land use designations is found in **Section 3.9.1**.

Agriculture

The U.S. Department of Agriculture (USDA) performs a state-by-state census of agriculture every five years. The National Agricultural Statistical Service (NASS) collects census data from a list of all known potential agriculture operators. The census reports on various statistics relating to crop yields, farm acreage, and farm economics. According to the *2007 Census of Agricultural Crop Report*, 328,593 acres (or approximately 52 percent) of the total 637,107 acres in Sacramento were used for farming purposes. The market value of agricultural products sold by the 1,352 farms in Sacramento County in 2012 was approximately $346,588,000 (NASS, 2012).

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that federal programs are administered in a matter that is compatible with state and local units of government and private programs and policies to protect farmland.

The Natural Resource Conservation Service (NRCS), an agency of the United States Department of Agriculture (USDA), fulfills the directives of the Soil and Water Conservation Act by identifying significant areas of concern for the protection of our resources. NRCS uses a land evaluation and site assessment (LESA) system to establish a Farmland Conversion Impact Rating (FCIR) score. This evaluation is completed on Form AD 1006, the FCIR Form. The FCIR form has two components: the land evaluation, which rates soil quality up to 100 points, and the site assessment, which measures other factors that affect the farm's viability up to 160 points. The total FCIR score is used as an indicator for the project's sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level. Sites receiving a combined score of less than 160 (out of 260 possible points) do not require further evaluation; alternative project locations should be considered for sites with a combined score greater than 160 points.

Farmland Mapping and Monitoring Program

The State of California developed the Farmland Mapping and Monitoring Program (FMMP) to provide data to decision makers for use in planning for the present and future of California's agricultural land resources. To meet this goal, FMMP's objective is to provide maps and statistical data to the public,

academia, and local, state, and federal governments to assist them in making informed decisions for the best utilization of California's farmland. The Center for Disease Control and Prevention (CDC) classifies lands into seven agriculture-related categories: Prime Farmland, Farmland of Statewide Importance (Statewide Farmland), Unique Farmland, Farmland of Local Importance (Local Farmland), Grazing Land, Urban and Built-up Land (Urban land), and Other Land.

According to the FMMP, the site contains approximately 12 acres of prime farmland at the north end of the site, adjacent to Laguna Creek. There are also just over 80 acres of farmland of statewide importance, occurring both north of Drainage 2 and in the southwestern corner of the site. However, most of the site (approximately 167 acres) is comprised of farmland of local importance. One acre is classified as grazing land, while the remainder of the site, near the Mingo Road intersection, is classified as "other land."

Williamson Act

The California Land Conservation Act of 1965, commonly known as the Williamson Act, is designed to preserve farmlands and open space lands by discouraging premature and unnecessary conversion to urban uses. Under the provisions of the Williamson Act, landowners contract with the county to maintain agricultural or open space use of their lands in return for a reduced property tax assessment. The contract is self-renewing and the landowner may notify the county at any time of intent to withdraw the land from its preserve status. Withdrawal involves a ten-year period of tax adjustment to full market value before protected open space can be converted to urban uses. The Twin Cities site is not under an active Williamson Act Contract (DOC, 2012). The nearest Williamson Act Contract is adjacent to the northeast corner of the Twin Cities site across Highway 99 (CDC, 2014).

Sacramento County General Plan

The Sacramento County General Plan has the following provision regarding farmland conversion:

AG-5 Projects resulting in the conversion of more than fifty (50) acres of farmland shall be mitigated within Sacramento County, except as specified in the paragraph below, based on a 1:1 ratio, for the loss of the following farmland categories through the specific planning process or individual project entitlement requests to provide in-kind or similar resource value protection (such as easements for agricultural purposes): prime, statewide importance, unique, local importance, and grazing farmlands located outside the USB; prime, statewide importance, unique, and local importance farmlands located inside the USB. The Board of Supervisors retains the authority to override impacts to Unique, Local, and Grazing farmlands, but not with respect to Prime and Statewide farmlands. However, if that land is also required to provide mitigation pursuant to a Sacramento County endorsed or approved Habitat Conservation Plan (HCP), then the Board of Supervisors may consider the mitigation land provided in accordance with the HCP as meeting the requirements of this section including land outside of Sacramento County.

Site Setting

According to the USDA NRCS Websoil Survey database, if irrigated, approximately 95 percent of the Twin Cities site is considered Statewide Farmland (NRCS, 2014a). The majority of the remaining areas of the Twin Cities site are deemed Local Farmland if irrigated. A small section directly adjacent to the Laguna Creek floodplain is classified as Prime Farmland (NRCS, 2014a). Currently there are farming operations on the Twin Cities site compatible with the County GP designation, although as previously discussed the Twin Cities site and surrounding properties located within the City SOI area are zoned as Light Industrial, Commercial, Public-Quasi Public, Rural Residential, and Office Professional (City of Galt, 2009).

According to the California Farmland Mapping and Monitoring Program, the majority of the Twin Cities site is considered Farmland of Local Importance in the general middle of the site, and Farmland of Statewide Importance on the northern and southern portions of the site surrounding the Local Importance Farmland areas (FMMP, 2015). The remaining (minority) amount on the northernmost part of the proposed project site is considered Prime Farmland. This Prime farmland is not planned to be developed due to it being located in a floodplain.

3.9.2 HISTORIC RANCHERIA SITE – ALTERNATIVES D AND E

Guidance Documents and Zoning Ordinance

The 75-acre Historic Rancheria site is under the County's land use jurisdiction. Due to the similar designation as the Twin Cities site, these are discussed in **Section 3.9.1**.

Regional and Local Setting

The Historic Rancheria site is located on and adjacent to the Historic Wilton Rancheria in unincorporated Sacramento County. The Historic Rancheria site is currently developed with two residential units, one mobile home, two mobile trailers, three garage/storage structures, one barn structure, equestrian training structures, and undeveloped open space. A majority of the Historic Rancheria Site consists of undeveloped land, used for the grazing of horses.

The northernmost section of Historic Rancheria Site is bordered by a riparian corridor and the Consumnes River. The topography of the Historic Rancheria site is flat with a minor elevation changes between approximately 64 and 78 feet above mean sea level (msl). The Historic Rancheria site is located along Green Road, approximately 5.7 miles east of Highway 99, and northeast of the intersection of Wilton Road and Green Road. The Historic Rancheria site is outside of both the County's urban services boundary and the City of Elk Grove (Elk Grove) SOI area, which is located approximately five miles northwest.

Site and Vicinity Land Use

As shown in **Figure 3.9-2**, the Historic Rancheria site is designated by the County as primarily Agricultural-Residential (1-10 ac/du) and Agriculture Cropland. The northern areas of the Historic Rancheria site along the riparian corridor and the Consumnes River are designated Natural Reserve. Land to the east and west of the Historic Rancheria site is zoned as Agricultural Residential (1-10 ac/du) and General agriculture (20-ac). The nearest airstrips to the site are located at Sky Way Estates Airport, (approximately 1.5 miles to the east) and Lucchetti Ranch (approximately two miles northeast). Land uses to the north of the Historic Rancheria site are designated as Agriculture Cropland and Natural Preserve. Land uses to the south are designated primarily Agriculture Residential with a small area southwest of the Historic Rancheria site zoned as Commercial and Office (Sacramento County, 2011). A description of County land use designations is found in **Section 3.9.1**.

Agriculture

Site Setting

According to the USDA NRCS Web Soil Survey database, approximately 58.1 percent of the Historic Rancheria site is considered Prime Farmland if irrigated and approximately 40 percent is considered farmland of statewide importance. The majority of the remaining areas of the project sight are deemed Farmland of Local Importance if irrigated. While there are no current agriculture operations on the site, the site and vicinity are zoned Agriculture Residential and General Agriculture. The Historic Rancheria site is not under an active Williamson Act Contract (DOC, 2012). The nearest Williamson Act Contract is more than 0.6 mile to the northeast (**Figure 3.9-2**).

The California FMMP classifies approximately half the site as farmland of statewide importance, and half the site as other land.

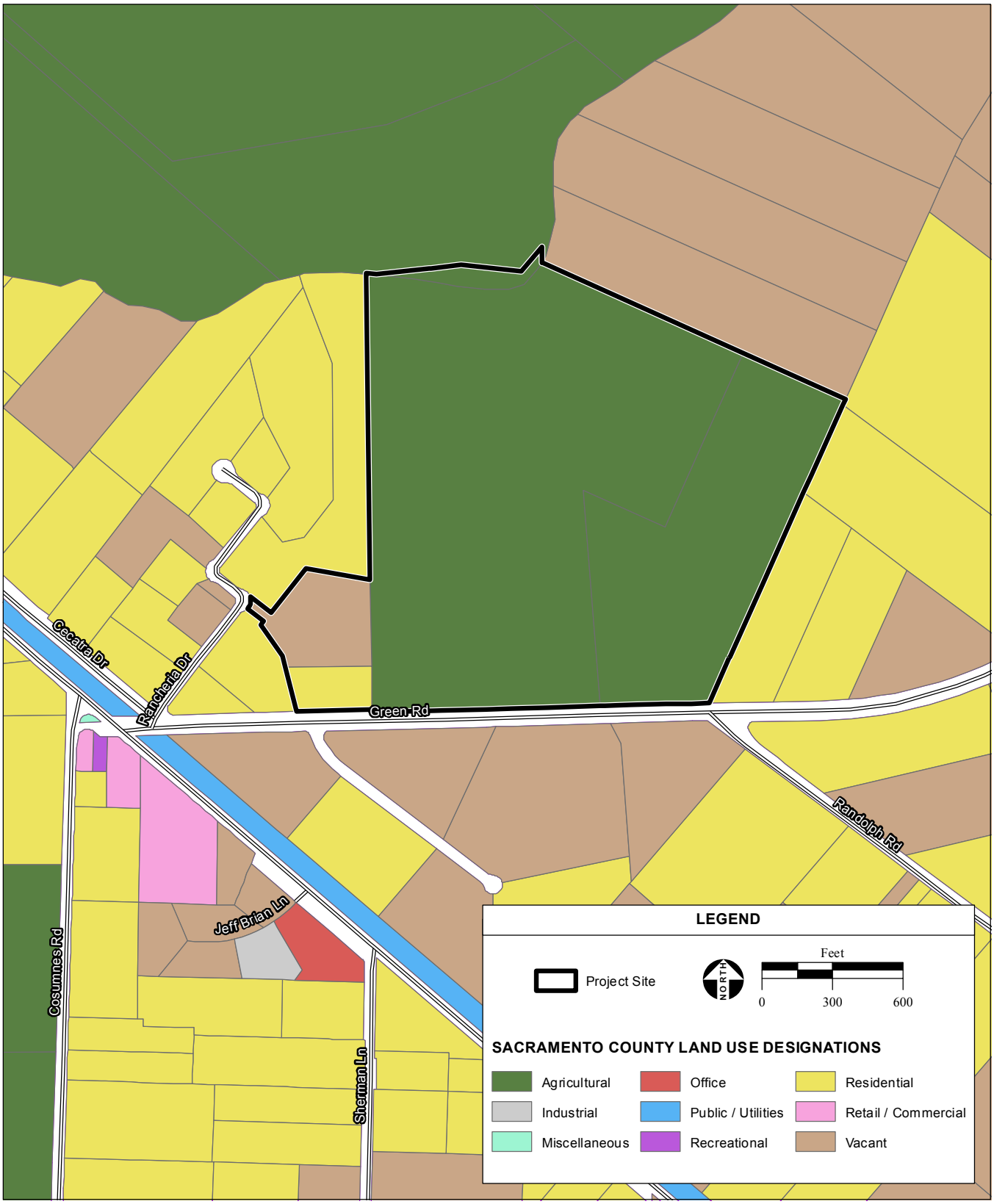
3.9.3 ELK GROVE MALL SITE -ALTERNATIVE F

Guidance Documents and Zoning Ordinance

Land use planning and development for the Mall site is guided by the City of Elk Grove General Plan (Elk Grove GP, 2009) and the Lent Ranch Specific Plan (2001).

Elk Grove General Plan

The objectives of the Elk Grove GP (adopted by City July 1, 2000) are to provide guidance to the development and management of land within the City of Elk Grove (Elk Grove). The Elk Grove GP summarizes its policies and implementation strategies as they relate to the City's goals and objectives. The GP covers 16 elements, including Land Use. The Land Use Policy map describes what type of new land uses are desired or whether existing open lands will be retained for agriculture, habitat, or other uses.



SOURCE: Sacramento County General Plan 6/2010; City of Galt General Plan, 4/2009; AES, 2014

Figure 3.9-2
Sacramento County Land Use Designations
for the Historic Rancheria Site

In some areas, the Land Use Policy Map shows future uses which differ from the existing land uses. The Land Use Map portrays the ultimate uses of land in and around the community through land use designations (City of Elk Grove, 2009). **Table 3.9-3** depicts the City of Elk Grove's strategies and policies applicable to the Mall site.

TABLE 3.9-3
CITY OF ELK GROVE APPLICABLE GENERAL PLAN STRATEGIES AND POLCIES

Policies	City of Elk Grove Planning Polices
LU-4	All land use approvals, including, but not limited to: • Zoning, • Planning documents (such as Specific Plans and Special Planning Areas), • Tentative Maps, • Conditional Use Permits, • Etc., shall be required to conform with the General Plan.
LU-7	The City encourages disclosure of potential land use compatibility issues such as noise, dust, odors, etc. in order to provide potential purchasers with complete information to make informed decisions about purchasing property.
LU -9	Land uses in the vicinity of areas designated as "Heavy Industry" on the Land Use Policy Map should include transitions in intensity, buffers, or other methods to reduce potential impacts on residential uses. Buffers may include land designated for other uses, such as Light Industry, commercial, or open spaces.
LU-35	Land uses in the vicinity of areas designated as "Heavy Industry" on the Land Use Policy Map should include transitions in intensity, buffers, or other methods to reduce potential impacts on residential uses. Buffers may include land designated for other uses, such as Light Industry, commercial, or open spaces.
LU-36	Signs should be used primarily to facilitate business identification, rather than the advertisement of goods and services. Sign size limits and locations should be designated consistent with this policy.
Source: City of Elk Grove, 2009	

Lent Ranch Marketplace Specific Plan

The Lent Ranch Marketplace Specific Plan (SP) as approved by Elk Grove City Council on June 27, 2001, guides and controls the nature of development within the Lent Ranch project area, a portion of which is the site of the proposed development of the Mall site Alternative. The SP provides standards, guidelines, and procedures necessary to satisfy the provisions in the City Code (City of Elk Grove, 2001). The Mall site and surrounding properties are located within the Lent Ranch Special Planning Area (SPA).

This 295-acre SPA has been designated for future commercial land uses. The Mall site is divided into five land uses consisting of a regional mall, community commercial, office entertainment, visitor commercial, and multi-family residential uses and is zoned SPA-LR by the City (City of Elk Grove, 2001) . The SPA is consistent with the Elk Grove GP and related regulations, policies, ordinances and programs governing zoning amendments and adoption of SPA land use plans. The various land uses permitted within the SPA are consistent with the goals, policies, and general land uses described in the General Plan.

Elk Grove Zoning Code

Title 23, Zoning, of the Elk Grove Municipal Zoning Code (Elk Grove Code) carries out the policies of the Elk Grove GP by classifying ad regulating the uses and development of land and structures within Elk Grove to be consistent with the GP. The Zoning Code is adopted to protect and promote the public health, safety and convenience, prosperity, and general welfare of residence and business in Elk Grove. A description of the applicable zoning designations for the Mall site and vicinity are described below.

Commercial

The Commercial designation is generally characterized by office, professional, and retail uses in any mix. Residential uses are not permitted.

Commercial/Office

Commercial/Office designation is generally characterized by office, professional, and retail uses in any mix. Residential uses are not permitted.

Commercial/Office/Multi-Family

Commercial/Office/Multi-Family land use designation is generally characterized by office, professional, and retail uses in any mix. Also includes high density residential development.

Heavy Industrial

The Heavy Industry land use designation is generally characterized by industrial or manufacturing activities, which may occur inside or outside of an enclosed building.

High Density Residential

The High Density Residential designation may consist of apartments, condominiums, or clustered single family (City of Elk Grove, 2009).

Light Industrial

The Light Industry designation is generally characterized by industrial or manufacturing activities, which occur entirely within an enclosed building.

Low Density Residential

The Low Density Residential designation is characterized by lot sizes that vary, generally from approximately 6,000 to 10,000 square feet (SF).

Regional and Local Setting

The Mall site is located in the City of Elk Grove, immediately west of Highway 99, north of Kammerer Road, and east of Promenade Parkway. The Mall site was partially developed in 2008 with parking

facilities and commercial structures including department stores and a movie theater; however, these commercial structures are only partially constructed and are vacant. Due to the downturn in the economy, the project has remained in a state of suspension for several years. The partially developed 2008 project was consistent with the City approved Lent Ranch SP.

Site and Vicinity Land Use

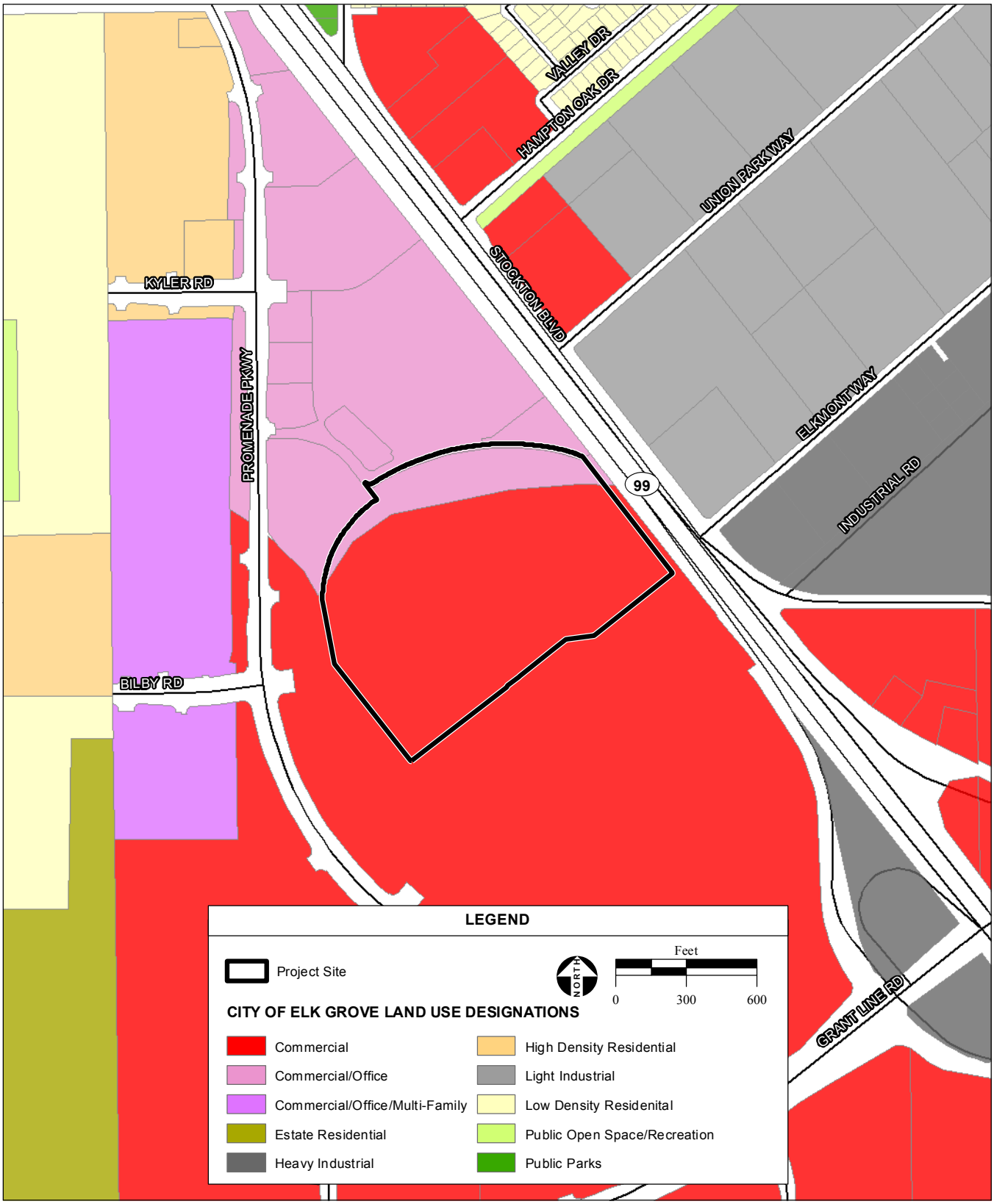
Land use on the Mall site is designated as Commercial in the Elk Grove GP (**Figure 3.9-3**). Existing land use to the immediate north of the Mall site is designated Commercial Office and Commercial/Office and further north along Promenade Parkway land use is designated Heavy Industrial and Light Industrial. Land use to the west is zoned Commercial, Commercial/Office/Multi-Family, Medium Density Residences, Low Density Residences (City of Elk Grove, 2009). Land to the south of the Mall site is outside of Elk Grove's boundaries and designated by the County as Agricultural Croplands (Sacramento County, 2011). Existing land uses northwest and west of the Mall site include vacant land and agricultural uses, to the east is industrial, and to the north is primarily commercial. The nearest airstrip is approximately two miles northeast of the Mall site.

Agriculture

Prior to the incorporation of Elk Grove, the area of the Lent Ranch SPA and the surrounding parcels were in agricultural production, but were undergoing change as the area developed. As part of the City's planning process after Elk Grove was incorporated, Lent Ranch SPA was included within the City's Urban Policy Area and the Urban Service Boundary. The designation of the area for urban development and subsequent development both within and outside of the SPA has removed much of the land from agricultural use. As part of the establishment of the SPA, an Environmental Impact Report was prepared (City of Elk Grove, 2000); this document addressed the environmental impacts to agriculture resources.

There are no farming operations on the Mall site or infrastructure that would support land cultivation. Consultation with the NRCS has determined that the Mall Site is not subject to protection under the FPPA due to the fact that it has been set aside for urban development. Furthermore, the Mall site is not under an active Williamson Act Contract (DOC, 2012).

The California FMMP classifies most of the Mall site as urban and built-up land.



SOURCE: Sacramento County General Plan 6/2010; City of Galt General Plan, 4/2009; AES, 2014

Figure 3.9-3

Elk Grove Land Use Designations
for Elk Grove Mall Site

3.10 PUBLIC SERVICES

This section describes the existing environmental conditions for the proposed Twin Cities, Historic Rancheria, and Mall sites. The general and site-specific profiles of public services contained herein provide the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.10**, **Section 4.14**, and **Section 4.15**, respectively. The services that are addressed include: water supply, wastewater collection and treatment, solid waste service, law enforcement, fire protection, emergency medical services, electricity, and natural gas.

3.10.1 WATER SUPPLY

Twin Cities Site

The Twin Cities site is not currently connected to a municipal water system. Existing site water supply for irrigation and domestic use is provided by three on-site agricultural/irrigation wells and one domestic well. The wells have been reported to supply the following yields: 400 gallons per minute (gpm) (AG-3 and AG-5), 1,100 gpm (AG-4), and 50 gpm (DW-1) (**Appendix K**).

Municipal water service in the vicinity of the Twin Cities site is provided by the City of Galt (City) within its existing service area to the south and east, and by private groundwater wells within the surrounding Sacramento County (County) properties. The Twin Cities site is located in the City's Sphere of Influence (SOI) area, in an area where the City's water system is anticipated to expand water service per the 2010 Water Distribution Master Plan (**Appendix I**). The closest City well to the Twin Cities site is the Golden Heights Well 17, located approximately 1.5 miles south of the Twin Cities site. Golden Heights Well 17 is approximately 930 feet deep with a flow rating of 1,250 gpm (City of Galt, 2013).

The City Public Works Department Water Division operates the City's water system which provides water throughout the community. The City's existing water system supports approximately 7,200 connections and a total population of about 23,605. Development of the 2030 Galt General Plan infrastructure would provide adequate water supply for a build out population of 51,291 (City of Galt, 2013).

The City relies upon groundwater from the Cosumnes Subbasins of the San Joaquin Valley Groundwater Basin as its sole source of domestic potable water. The Cosumnes Subbasins is an un-adjudicated basin that supports both municipal and agricultural users. The quality of the ground water is generally good, with the City only needing to treat for iron, manganese, and arsenic to meet maximum contaminant levels established by the California Department of Public Health. In addition, the water is disinfected by adding low levels of chlorine (City of Galt, 2013).

The City has eight well sites, of which seven are currently active and one serves as standby. The seven frontline wells have a total capacity of approximately 9,000 gpm, and the stand-by well has a capacity of

approximately 1,500 gpm. The depth to groundwater is approximately 80 to 100 feet, with the wells drawing water from depths ranging from 350 to 900 feet (City of Galt, 2009b). The City water system includes storage tanks at three locations. Two of the locations each have a three-million-gallon storage tank and one location has two-and-one-half-million-gallon storage tanks. The total existing storage capability is nine million gallons. A fourth storage tank location is presently planned near the Carillion Water Treatment Plant (WTP) on the east side of the city. The water distribution system consists of pipelines ranging in size from four to 12 inches in diameter, and the water transmission system consists of pipelines ranging in size from 16 to 24 inches in diameter (Galt, 2009b).

City growth planned for in the 2030 Galt General Plan would result in the need for increased water supply facilities, either through the construction of new facilities or through the expansion or retrofitting of existing facilities. Beyond the existing nine wells and one backup well, and based on future water demand analysis, seven to eight more wells would need to be added to the water service system for a total of 15 to 16 active wells and one backup well (City of Galt, 2013). Additional water treatment facilities and infrastructure servicing the Twin Cities site vicinity is detailed in the City's Water Distribution Master Plan prepared in 2010 (City of Galt, 2010a). The water system expansion that would serve the Twin Cities site and vicinity includes three wells, a water treatment system, and a storage tank on Bergeron Road, located north of Twin Cities Road (**Appendix I**). The expansion will occur between 2016 and 2020, as part of the Phase II of Water Distribution Master Plan.

Historic Rancheria Site

Municipal water service connections are not currently provided to the Historic Rancheria site. Water supply is provided through two agricultural/irrigation wells and two domestic wells. Water is supplied in the vicinity of the Historic Rancheria site by private groundwater wells. The nearest municipal water systems are the Elk Grove Water District (EGWD) and Sacramento County Water Agency (SCWA), with service areas located approximately 2.4 miles west of the Historic Rancheria site.

Sacramento County Water Agency

The SCWA provides municipal water to approximately 49,000 households and owns and operates more than 60 wells and more than ten water treatment plants. Major services include water supply development review, planning, and water supply capital facilities design. SCWA potable water originates from a combination of surface and groundwater sources, with groundwater currently being the primary source – approximately 75 percent. The boundaries of the SCWA are virtually identical to the boundaries of the County. The SCWA has the authority to create "zones" within the agency "in order to finance, construct, acquire, reconstruct, maintain, operate, extend, repair, or otherwise improve any work or improvement of common benefit to such zone. There are currently eight zones of the SCWA (SCWA, 2014).

SCWA pumps groundwater from the South American Subbasin of the Sacramento Valley Groundwater Basin (identified locally as the Central Basin). According to the Water Forum Agreement, the annual

long-term sustainable yield of the South American Subbasin is 273,000 acre-feet (City of Elk Grove, 2013a). Current groundwater pumping from the South American Subbasin is significantly below this threshold. The Central Basin is not considered to be in overdraft. However, intensive groundwater extraction from the Central Basin has resulted in a general lowering of groundwater elevations near the center of the Central Basin away from the sources of recharge. These depressions have grown and coalesced into a single cone of depression centered near Elk Grove (City of Elk Grove, 2013a). The remaining SCWA water demand is met by surface water supplies.

SCWA is responsible for providing wholesale water to an area that includes the Laguna, Vineyard, Elk Grove, and Rancho Cordova communities, commonly referred to as "Zone 40". The Zone 40 service boundary is approximately two miles north of the Historic Rancheria site. The creation of Zone 40 empowered the SCWA to establish fees, charges, credits, and regulations for the wholesale supply of water to zones with the SCWA. Customers in various parts of the Zone 40 service area receive a portion of their drinking water from surface water (American and Sacramento River) from the City of Sacramento via the Franklin Intertie with SCWA and the Vineyard Surface WTP via the Freeport Regional Water Project. SCWA's Zone 40 provides for the planning and construction of major water supply facilities in the urban and urbanizing areas of the Elk Grove, Vineyard, and Rancho Cordova communities, generally located in the central part of the County (City of Elk Grove, 2013a). However, water system expansions to the Historic Rancheria site and vicinity are not currently a part of SCWA Water Supply Master Plan (SCWA, 2005).

Elk Grove Water District

The EGWD is owned and operated by Florin Resources Conservation District. The EGWD service area covers approximately 13 square miles and is bound by Sheldon Road to the north, State Route 99 (Highway 99) to the west, Grant Line Road to the east, and the Union Industrial Park to the south (City of Elk Grove, 2013a). EGWD provides water to approximately 12,050 connections, with a customer base of approximately 35,600 people within the City of Elk Grove (Elk Grove, 2013a). EGWD's retail water rates pay for the SCWA Zone 41 wholesale supply as well as EGWD's maintenance and operation costs. The eastern boundary of the EGWD service area is located approximately 2.1 miles west of the Historic Rancheria site.

Elk Grove Mall Site

The Mall site is adjacent to the area serviced by the EGWD. However, SCWA municipal water system infrastructure is already installed at the Mall site; the previous developer had coordinated with SCWA to construct an appropriate water distribution system. The water supply is managed by the SCWA (described above) and is operated and maintained as Zone 41 within the South Service Area (SSA). The Mall site is connected to the SCWA water distribution system through four existing connection points on Promenade Parkway, immediately west of the Mall site. An existing network of water system piping running throughout the Mall site connects to the 12 inch diameter distribution mains, and contains meters,

fire protection sprinkler and hydrant connections, and blow-off points. For a detailed description of the Mall sites water system infrastructure, refer to **Appendix I**.

3.10.2 WASTEWATER SERVICES

Twin Cities Site

The Twin Cities site is not currently connected to a public wastewater system. The existing residential unit in the southeast corner of the Twin Cities site is developed with an individual private septic system. Wastewater service in the vicinity of the Twin Cities site is provided by private septic systems and by the City within existing service areas to the south of Twin Cities Road.

City of Galt Wastewater Division

The City of Galt Wastewater Division provides sewage treatment of urban and industrial wastewater by means of a return activated sludge process at its wastewater treatment plant (WWTP) located approximately 0.5 miles west of the Twin Cities site (**Appendix I**).

The City's WWTP has a capacity of 3.0 MGD and is currently operating at approximately 2.2 million gallons per day (MGD). The plant is designed and laid out in a manner that would allow it to be expanded to 6 MGD, and is expected to have 4.5 MGD capacity by 2020 (**Appendix I**). In addition to capacity improvements, the City is currently implementing several treatment process related improvements in order to continue compliance with the requirements of the Regional Water Quality Control Board (RWQCB), and to ensure adequate capacity for planned future development (City of Galt, 2009b).

The WWTP is operated under provisions of the City's National Pollutant Discharge Elimination System (NPDES) permit. The City's NPDES permit was renewed by the Central Valley RWQCB in September 2010. The renewed NPDES permit authorizes year round surface water discharge to Skunk Creek up to the design/permitted rate of 3.0 MGD average dry weather flow (ADWF). During the July through September period, which represents the ADWF during the three direst months, the NPDES permit allows the City to practice reclamation activities via crop irrigation on the City-owned property during summer months to the extent practicable. Therefore, during the summer months, the City operates an agriculture reuse site (surrounding the WWTP) where fodder, fiber, or food crops that are not directly used for human consumption are grown.

The operation and maintenance of the sanitary sewer collection system and the WWTP is funded by monthly utility bills. A development impact fee is assessed to new development to fund the construction of the trunk line system and the WWTP. New development is generally required to construct the sanitary sewer collection system components associated with their projects. In addition, WWTP upgrades, in order to achieve compliance with the requirements of the RWQCB, are funded by a supplemental monthly utility fee on existing accounts as well as new development impact fees (Galt, 2009b).

Historic Rancheria Site

The Historic Rancheria site currently has no connections to public wastewater services and the existing residences on the Historic Rancheria site use private septic systems. There are no municipal wastewater services in the vicinity of the Historic Rancheria site; therefore, properties in the vicinity also rely on private septic systems. The sanitary sewer collection system of the Sacramento Area Sewer District (SASD) and the sanitary sewer treatment boundaries of the Sacramento Regional County Sanitation District (SRCSD), described below, are located approximately 2.5 miles northwest of the Historic Rancheria site (SASD, 2010).

Elk Grove Mall Site

The Mall site lies within the sanitary sewer collection system of the SASD, and the sanitary sewer treatment boundaries of the SRCSD. The Mall site has several eight-inch diameter sewer lines that converge to a central eight-inch diameter line near Bilby Road and then connect to a 15-inch diameter trunk sewer main on Promenade Parkway, located immediately west of the Mall site. The SASD provides public sewer collection and the SRCDS provides wastewater treatment services to the Mall site (**Appendix I**). Refer to **Appendix I** for a detailed description of the existing wastewater infrastructure on the Mall site.

Sacramento Area Sewer District

The SASD provides local wastewater collection and conveyance services and infrastructure throughout the Sacramento region. SASD maintains and provides wastewater collection and conveyance from the local residences and businesses in the urbanized, unincorporated areas of the County, the cities of Elk Grove, Rancho Cordova, Citrus Heights, portions of the City of Sacramento and a very small area in the City of Folsom. The service area covers approximately 270 square miles and has a population of over 750,000. The smaller local pipelines that SASD operates connect to the larger regional pipelines maintained by SRCSD. SASD is the largest of the four contributing agencies of the SRCSD. Wastewater from SASD is discharged into the SRCSD interceptor system and treated at SRCSD's Sacramento Regional Wastewater Treatment Plant (SRWTP). SASD also provides wastewater collection for the Rio Cosumnes Correctional Center and the delta communities of Courtland and Walnut Grove. (SASD, 2010). As discussed above, the nearest 15–inch diameter trunk sewer main is located on Promenade Parkway, immediately west of the Mall site.

Sacramento Regional County Sanitation District

The SRCSD provides large pipeline conveyance of wastewater from all areas serviced by SASD, including the cities of Sacramento, West Sacramento, Citrus Heights, Rancho Cordova, Elk Grove and Folsom to the Sacramento Regional WWTP. In normal weather years, the SRCSD treats, on average, approximately 150 MGD of wastewater. After wastewater is treated and de-chlorinated, the treated effluent is discharged into the Sacramento River (SRCSD, 2013).

The Sacramento Regional WWTP, located approximately 7.0 miles north west of the Mall site, has a permitted capacity of 181 MGD ADWF. The facility's current ADWF is approximately 140 MGD. A NPDES Discharge Permit was issued to SRCSD by the Central Valley RWQCB in December 2010. The Sacramento Regional WWTP currently has an available capacity of about 40 MGD (**Appendix I**).

3.10.3 SOLID WASTE SERVICES

California Integrated Waste Management Act

In 1989, the State of California enacted Assembly Bill (AB) 939, the California Integrated Waste Management Act, which requires jurisdictions to conduct a solid waste disposal needs assessment that estimates the disposal capacity needed to accommodate projected solid waste generated within the jurisdiction and to identify a minimum of 15 years of permitted disposal capacity. All local jurisdictions are required to divert 50 percent of their total waste stream from landfill disposal.

Twin Cities Site

The Twin Cities site is currently within the service boundaries of the County Municipal Services Agency Department of Waste Management and Recycling (County DWMR), but service is provided by mostly private franchised hauling companies. The private hauling companies are under franchise agreement with the County DWMR to perform collection and disposal at properties and convey waste to landfills and recycling stations, as appropriate (City of Galt, 2009b). Solid waste services within the City's existing service area, to the south of Twin Cities Road, are provided by California Waste Recovery Systems (CWRS). CWRS transports solid waste to the Kiefer Landfill, which is the primary municipal solid waste disposal facility in the County.

Sacramento County Department of Waste Management and Recycling

The County DWMR offers commercial and residential solid waste collection by permitted private haulers. The County DWMR operates the Class III Kiefer Landfill, which is the primary municipal solid waste disposal facility in the County, and the North Area Recovery Station (NARS). The Kiefer Landfill, located in Sloughhouse, California, is permitted to accept general residential, commercial, and industrial refuse for disposal, including municipal solid waste, construction and demolition debris, green materials, agricultural debris, and other nonhazardous designated debris. The Kiefer Landfill maintains a permitted capacity of 10,815 tons per day. The landfill facility sits on 1,084 acres, but currently uses only a small portion of the total area as landfill. The landfill has nearly 113 million cubic yards of available capacity, and is estimated to have sufficient capacity to maintain operations through 2064 (Cal Recycle, 2014).

City of Galt Solid Waste Services

CWRS currently provides residential and commercial solid waste collection within the City via a franchise agreement. The term of the current franchise agreement is from July 1, 2007 to February 28, 2016. CWRS provides 60 gallon trash and recycling carts, 90 gallon green waste carts, and 1-to-40 cubic

yard containers for commercial uses. The City offers curbside recyclable and green-waste collection, and household hazardous waste collection events for residents. CWRS transports solid waste to the Kiefer Landfill (Galt, 2009a).

Historic Rancheria Site

Solid waste services at the Historic Rancheria site are provided by private hauling companies through a franchise agreement with the County DWMR.

Elk Grove Mall Site

Solid waste services in the City of Elk Grove are provided by Republic Services (formerly known as Allied Waste Services). Solid waste is transported to the Kiefer Landfill.

3.10.4 LAW ENFORCEMENT SERVICES

Twin Cities Site

All emergency service providers in the County have developed a Joint Powers Authority (JPA) for a unified service area dispatch system. The Twin Cities site is currently within the service boundaries of the County Sheriff's Department (SCSD); however, the City of Galt Police Department (Galt PD) also provides services to the Twin Cities site through a mutual aid agreement. The Galt PD station is located approximately 2.4 miles south of the Twin Cities site.

Sacramento County Sheriff's Department

The SCSD provides specialized law enforcement services to the County and local police protection to both the incorporated and unincorporated areas. Specialized law enforcement includes providing court security services, operating a system of jails for pretrial and sentenced inmates, and operating a training complex. Local police protection includes response to calls and trouble spots, investigations, surveillance, and routine patrolling. There are seven patrol districts in the unincorporated area of the county covering approximately 994 square miles and including 1.46 million people. The Twin Cities site is located within South Zone in District 82. The SCSD consists of roughly 1197 sworn officers, including 575 non-sworn staff (Matthews, 2014).

City of Galt Police Department

The Galt PD provides police services for the City and services a population of over 24,000 (Gross, 2014). The Galt PD has one station, which is located at 455 Industrial Drive. The Galt PD employs 52 personnel, 38 of which are sworn, and is divided into two divisions, operations and administrative (Wilkerson, 2014; Galt, 2009a). The City of Galt relies on the SCSD when emergency calls exceed the police department's capacity. The Department staffing varies from two to six officers on duty at any given time depending on

the time of day. GPD standard response time to priority calls is five minutes and 55 seconds (Gross, 2014).

California Highway Patrol

The California Highway Patrol (CHP) responds to all traffic related incidents in unincorporated County. Additionally, CHP responds to all incidents on Highway 99 within the City. The City, and County, is located within the CHP Valley Division. The Valley Division oversees four major highways - Interstate 80, Interstate 5, U.S. 50, and Highway 99, in addition to thousands of miles of state and county roads. The Valley Division is comprised of 19 Area Offices, three Residential Posts, a Commercial Inspection Facility, a Transportation Management Center, and four Communications/ Dispatch Centers. Total staff for the Valley Division includes 862 uniformed officers and 275 non-uniformed personnel (CHP, 2014 and Federighi, 2014). The Valley Division office is located at 2555 First Ave., in Sacramento, California.

Historic Rancheria Site

Primary police protection service for the Historic Rancheria Site is provided by the SCSD and the CHP Valley Division, which patrol the area and respond to all traffic related incidents in unincorporated County. The nearest Sheriff's Station is located at the Wilton Service Center on 10661 Alta Mesa Road, approximately 4.5 miles southeast of the Historic Rancheria site. The Wilton Service Center is shared with the Wilton Fire Department as well as CHP. This substation handles non-emergency calls for the rural areas of Delta, Wilton, Herald, Freeport, Laguna West, and the unincorporated areas of Galt.

Elk Grove Mall Site

Primary police protection service for the Mall site is provided by the Elk Grove Police Department (EGPD) with secondary services provided by the SCSD. The CHP responds to all traffic related incidents in unincorporated County. The nearest EGPD station is located approximately 2.7 miles northwest of the Mall site.

Elk Grove Police Department

The EGPD became active in June of 2006. The service boundaries of the EGPD are contiguous with the City of Elk Grove's city limits. The EGPD provides all law enforcement services, including responding to all crime related events, handling all traffic related issues, and providing services to the citizens of Elk Grove.

The EGPD operates primarily out of two facilities located in Elk Grove City Hall complex at 8380 Laguna Palms Way, located approximately 2.7 miles northwest of the Mall site. The EGPD has approximately 207 staff positions and 131 sworn police officers and 77 non-sworn management, administration, and technical positions (City of Elk Grove, 2013b; Trim, 2014). The Elk Grove Communication Center answers an average of 186,000 emergency and non-emergency calls annually. In

the 2012-2013 fiscal year, 97,068 calls for service were received, with 52,266 resulting in a unit being dispatched. For the same time period, EGPD's response time to top priority calls (from call to dispatch to arrival on scene) was five minutes and 57 seconds (City of Elk Grove, 2013b; Trim, 2014).

3.10.5 Fire Protection and Emergency Medical Services

Twin Cities Site

The Twin Cities site is currently within the service boundary of the Cosumnes Community Service District (CCSD) Fire Department. The Cosumnes Fire Department and the Tribe signed a Letter of Intent for fire and emergency services in September 2014, which sets forth the intention to negotiate an MOU (**Appendix E**). The nearest fire stations to the Twin Cities site is Fire Station 46, located approximately 2 miles southeast of the Twin Cities site. The nearest emergency room is located at Methodist Hospital of Sacramento, approximately 12 miles north of the Twin Cities site.

Cosumnes Community Services District Fire Department

The CCSD Fire Department was formed in November 2006 when the Elk Grove Community Services District Fire Department reorganized with the Galt Fire Protection District. The CCSD Fire Department provides fire and life safety services to the cities of Elk Grove and Galt, as well as surrounding areas of unincorporated County (including the Twin Cities site).

The CCSD Fire Department provides emergency services such as fire suppression, emergency medical services, technical rescue, and arson and explosion investigations. The service area covers a population of approximately 185,000. The CCSD has 163 sworn personnel and 14 support staff and operates out of eight fire stations with seven engine companies, one ladder truck, six ambulances, and one command vehicle, as well as other specialized apparatus for specialized emergency circumstances (CCSD, 2014a; Ebner, 2014). The CCSD's fire stations are at the following locations:

- Fire Station 45, located at 229 5th Street in central Galt
- Fire Station 46, located at 1050 Walnut Avenue in northeast Galt
- Fire Station 71 is located at 8760 Elk Grove Boulevard in Elk Grove
- Fire Station 72, located at 10035 Atkins Drive in Elk Grove.
- Fire Station 73, located at 9607 Bond Road in Elk Grove;
- Fire Station 74, located at 6501 Laguna Park Drive in Elk Grove.
- Fire Station 75, located at 2300 Maritime Drive in Elk Grove.
- Fire Station 76, located at 8545 Sheldon Road in Elk Grove (CCSD, 2014b)

The CCSD Fire Department operates three full-time medic units from Fires Station 73, 74, and 75. The CCSD provides Basic Life Support (BLS) and Advanced Life Support (ALS) and ambulance transport services in the CCSD service boundaries, as well as the nearby communities of Wilton, Herald, and Courtland (CCSD, 2014a). Response time goals for the CCSD Fire Department are to arrive on scene

within 6 minutes or 90 percent of the time in urban areas and within 20 minutes 90 percent of the time in rural areas from the time the call is received at the station (CCSD, 2014b).

Historic Rancheria Site

Primary fire protection and emergency services for the Historic Rancheria site is provided by CCSD Fire Department. The nearest CCSD Fire Department station is Fire Station 73, located approximately 4.1 miles northwest of the Historic Rancheria site. The nearest emergency room is located at Methodist Hospital of Sacramento, approximately 8.6 miles northwest of the Historic Rancheria site. The Methodist Hospital of Sacramento has 162 acute care beds.

Elk Grove Mall Site

Primary fire protection and emergency services for the Mall site are provided by the CCSD Fire Department. The nearest fire station is Fire Station 71, located approximately 2.0 miles north of the Mall site. The nearest emergency room is located at Methodist Hospital of Sacramento, located approximately 5.7 miles north of the Mall site.

3.10.6 ENERGY

Twin Cities Site

Electrical service to the Twin Cities site is currently provided by Sacramento Municipal Utilities District (SMUD). No existing natural gas service lines connect to the site. Pacific Gas and Electric (PG&E) and other private providers currently supply natural gas services to customers in the vicinity of the Twin Cities site. SMUD serves the project vicinity out of its Twin Cities Substation, located to the west of the Twin Cities Road/West Stockton Boulevard intersection to the immediate south of the Twin Cities site.

SMUD

SMUD generates, transmits, and distributes electric power to a 900-square-mile territory that includes the County and a smaller portion of Placer County and Yolo County. SMUD is the sixth largest publicly-owned utility in the country in terms of customers served. SMUD's energy programs are known throughout the State, nation, and world. SMUD gets electricity from a variety of sources, including hydrological dams, cogeneration plants, advanced renewable sources such as wind, solar, and biomass/landfill gas power, and obtains additional energy on the wholesale market. SMUD's largest single source of electricity is the 500-megawatt Cosumnes Power Plant located in the southern Sacramento County (SMUD, 2014).

SMUD owns and operates the Upper American River Project (UARP), which consists of 11 reservoirs and eight powerhouses. In a normal water year, the UARP provides approximately 1.8 billion kilowatt-hours of electricity, enough energy to power approximately 180,000 homes, and provides operational flexibility, system reliability, and economical power generation for SMUD (SMUD, 2014). As shown in

Figure 2-3, a 69-kilovolt (kV) overhead electrical line runs along West Stockton Boulevard north of Twin Cities Road (Kearney, 2015).

As of 2014, SMUD's transmission assets could provide approximately 3,400 megawatts of power transmission load during peak demand, which equates to approximately 220 megawatts of excess load capacity while meeting prescribed reliability standards (SMUD, 2013). The current peak load capacity will increase by 30 megawatts in connection with the Hurley 50 MV Shunt Capacitor, which is anticipated to come online during 2015. Such total committed load capacity of 3,530 megawatts should continue to meet peak demand through the year 2023, assuming an annual growth rate of 0.6 percent. SMUD has plans for an additional 3 projects that, if they come online, would provide an additional 280 megawatts of load capacity. These projects are anticipated to come online beginning in the year 2018. These projects are in various stages of the planning and approval process.

PG&E

PG&E provides natural gas and electric service to approximately 15 million people throughout a 70,000-square-mile service area in Central and Northern California. PG&E provides natural gas service to customers in Sacramento County, including Elk Grove. PG&E maintains 42,141 miles of natural gas distribution pipelines and 6,438 miles of transportation pipelines and provides natural gas service to 4.3 million customer accounts (PG&E, 2014). As shown in **Figure 2-3**, there is a six-inch diameter natural gas pipeline along Twin Cities Road that extends east from Bergeron Road (Roe, 2015).

Historic Rancheria Site

Electrical service to the Historic Rancheria site is currently provided SMUD. The current residences on the Historic Rancheria site are connected to SMUD overhead electrical lines located along Green Road, immediately south of the Historic Rancheria site. No existing natural gas service lines connect to the site. All gas service is provided by private propane tanks. Electricity and natural gas services within the vicinity of the Historic Rancheria site are provided by SMUD and PG&E.

Elk Grove Mall Site

SMUD provides electricity to the site and PG&E provides natural gas to the Mall site. While the Mall site does have infrastructure for electrical developments and natural gas, the connections were not finalized during previous development.

3.10.7 SCHOOLS

The Twin Cities, Historic Rancheria, and Elk Grove Mall sites are served by the Galt Joint Union Elementary School District (GJUESD), the Galt Joint Union High School District (GJUHSD), and the Elk Grove Unified School District (EGUSD). The GJUESD currently operates five elementary schools and one middle school. The GJUHSD currently operates two high schools and a continuation high school. The

2008-2009 GJUESD enrollment was 4,190 and the GJUHSD enrollment was 2,405 (City of Galt, 2012). The EGUSD includes 40 elementary schools (K-6), nine middle schools (7, 8), nine high schools (9-12), six alternative schools, and two facilities dedicated to adult education (EGUSD, 2014; **Appendix N**).

3.10.8 LIBRARIES AND PARKS

The nearest library to the Twin Cities site is the Galt Branch Library, approximately 3.1 miles to the southeast. The Elk Grove Public Library is nearest to both the Historic Rancheria site and the Mall site; it is approximately 5.6 miles west of the Historic Rancheria site and 2.0 miles north of the Mall site. The Franklin Community Library, approximately 3.4 miles northwest, is also in the vicinity of the Mall site.

Lake Canyon Park (approximately 1.0 miles to the southeast), Emerald Vista Park (approximately 1.3 miles southeast), and Galt Community Park (approximately 1.6 miles to the southeast) are the nearest parks to the Twin Cities site. The Deer-Okamoto Community Park is located approximately 3.9 miles southwest of the Historic Rancheria site. Jennie McConnell Park is located approximately 0.8 miles northeast of the Mall site, Elk Grove Regional Park is approximately 0.9 miles north, and Berens Park is approximately 1.3 miles to the northeast.

3.11 NOISE

This section describes the existing noise conditions at the alternative sites. The general and site-specific description of the noise setting contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.11**.

3.11.1 ACOUSTICAL BACKGROUND AND TERMINOLOGY

Sound is defined as any pressure variation in air that the human ear can detect, and is technically described in terms of loudness (amplitude) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The dB scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the dBA sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in dB.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent sound level (Leq) over a given time period (usually one hour). The Leq is the foundation of the Day-Night Average Level (Ldn) noise descriptor, and shows very good correlation with community response to noise. The Ldn is based upon the average noise level over a 24-hour day, with a +10 dB weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were louder than daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment. Ldn-based noise standards are commonly used to assess noise effects associated with traffic, railroad, and aircraft noise sources. **Table 3.11-1** contains definitions of acoustical terminology used in this section and **Section 4.11**. **Table 3.11-2** shows examples of noise sources and there effects on humans, which correspond to various, sound levels.

TABLE 3.11-1
ACOUSTICAL TERMINOLOGY

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ration of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	Sound pressure level in dBs as measured on a sound level meter using the A-weighting filter network, which de-emphasizes very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period.
Day/Night Noise Level, Ldn	The average dBA noise level during a 24-hour day, obtained after addition of 10 dB to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Source: FHWA, 2010.	

TABLE 3.11-2
TYPICAL A-WEIGHTED SOUND LEVELS

Common Noises	Noise Level (dBA)	Effect
Jet takeoff (200 feet)/Auto horn (3 feet)	120	Maximum vocal effort
Pile driver/Rock concert	110	Very loud
Garbage truck/Firecrackers	100	Very loud
Heavy truck (50 feet)/City traffic	90	Very annoying and continuous exposure is likely to result in hearing damage
Alarm Clock (2 feet)/Hair dryer	80	Annoying
Noisy restaurant/Freeway traffic/Business office	70	Telephone use difficult
Air conditioning unit/Conversational speech	60	Intrusive
Light auto traffic (100 feet)	50	Quiet
Living room/Bedroom/Quiet office	40	Quiet
Library/soft whisper (15 feet)	30	Very Quiet
Broadcasting studio	20	Very Quiet
Normal breathing[1]	10	Just Audible
Threshold of hearing	0	Hearing begins
[1]Caltrans, 2004 Source: U.S. Department of Housing and Urban Development, 2011.		

Effects of Noise on People

The effects of noise on people fall into three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Human reaction to a new noise can be estimated through comparison of the new noise to the existing ambient noise level within a given environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will likely be judged by the recipients. With regard to increases in dBA noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected.
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause adverse response.

Noise effects on humans can be physical or behavioral in nature. The mechanism for chronic exposure to noise leading to hearing loss is well established. The elevated sound levels cause trauma to the cochlear structure in the inner ear, which gives rise to irreversible hearing loss. Though not considered a health effect similar to those noted above, noise pollution also constitutes a significant factor of annoyance and distraction in modern artificial environments:

- The meaning listeners attribute to the sound influences annoyance; if listeners dislike the noise content, they are annoyed.
- If the sound causes activity interference (for example, sleep disturbance), it is more likely to annoy.
- If listeners feel they can control the noise source, it less likely to be perceived as annoying.
- If listeners believe that the noise is subject to third party control, including police, but control has failed, they are more annoyed.

Generally, most noise is generated by transportation systems, principally motor vehicle noise, but also including aircraft noise and rail noise. The level of traffic noise depends on three things: l) the volume of the traffic, 2) the speed of the traffic, and 3) the number of trucks in the flow of the traffic. Because noise

is measured on a logarithmic scale, 70 dBA plus 70 dBA does not equal 140 dBA. Instead, two sources of equal noise added together have been found to result in an increase of 3 dBA. That is, if a certain volume of traffic results in a noise level of 70 dBA the addition of the same volume of traffic, or doubling, would result in a noise level of 73 dBA (Caltrans, 2013). As stated above, three dBA is just audible; therefore, if a project doubles the traffic volume there would be an audible increase in the ambient noise level.

Noise attenuates (lessens) at a rate of six to nine dBA per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and noise barriers, vegetative or manufactured, etc.). Widely distributed noises, such as a large industrial facility or a street with moving vehicles would typically attenuate at a lower rate, approximately four to six dBA per doubling of distance.

3.11.2 REGULATORY SETTING

Federal Noise Abatement Criteria

The Federal Highway Administration (FHWA) provides construction noise level thresholds in its Construction Noise Handbook, 2006, which are provided in **Table 3.11-3**.

TABLE 3.11-3
FEDERAL CONSTRUCTION NOISE THRESHOLDS

Noise Receptor Locations and Land Uses	Daytime (7 am - 6 pm)	Evening (6 pm - 10 pm)	Nighttime (10 pm - 7 am)
	dBA, Leq[1]		
Noise-Sensitive Locations: (residences, institutions, hotels, etc.)	78 or Baseline + 5 (whichever is louder)	Baseline + 5	Baseline + 5 (if Baseline < 70) or Baseline + 3 (if Baseline > 70)
Commercial Areas: (businesses, offices, stores, etc.)	83 or Baseline + 5	None	None
Industrial Areas: (factories, plants, etc.)	88 or Baseline + 5	None	None

Notes: [1] Leq thresholds were empirically determined (FHWA, 2006).
Source: FHWA Construction Noise Handbook, 2006.

Operational noise standards used in this study are FHWA Noise Abatement Criteria (NAC) for the assessment of noise consequences related to surface traffic and other project-related noise sources. These standards are discussed below.

The FHWA establishes NAC for various land uses that have been categorized based upon activity. Land uses are categorized on the basis of their sensitivity to noise as indicated in **Table 3.11-4**. The FHWA NAC is based on peak traffic hour noise levels. Sensitive receptors with the potential to be impacted by the project alternatives include residential land uses; thus, the Category B noise standard (67 dBA Leq) would apply.

TABLE 3.11-4
FEDERAL NOISE ABATEMENT CRITERIA HOURLY A-WEIGHTED SOUND LEVEL DECIBELS[1]

Activity Category	Activity Criteria Leq (h), dBA	Evaluation Location	Activity Category Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential.
C	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[1]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, shipyards, utilities (water resources, water treatment, electricity), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

Notes: [1]Includes undeveloped lands permitted for this activity category.
Source: FHWA, 2010.

County of Sacramento General Plan – Noise Element

The County of Sacramento's General Plan's Noise element contains guidelines for traffic and non-traffic noise sources. Noise standards for traffic sources are similar to the FHWA thresholds described above, but are lower in some circumstances, as shown in **Table 3.11-5**.

The County of Sacramento's non-transportation noise standards are shown below in **Table 3.11-6**. The Noise Element of Sacramento County's General Plan was developed pursuant to the State of California's State Office of Planning and Research (OPR) Noise Element Guidelines (Sacramento County, 2011).

City of Galt General Plan – Noise Element

The City of Galt General Plan's Noise Element contains the following standards, shown in **Table 3.11-7**, for non-transportation noise. The City defines transportation noise sources as traffic on public roadways, railroad line operations, and aircraft in flight. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, and similar activities and operations.

TABLE 3.11-5
NOISE STANDARD FOR NEW USES AFFECTED BY TRAFFIC AND RAILROAD NOISE – SACRAMENTO COUNTY NOISE ELEMENT

New Land Use	Outdoor Area - Ldn	Interior Area - Ldn
All Residential	65	45
Transient Lodging	65	45
Hospital and Nursing Homes	65	45
Theaters and Auditoriums	NA	35
Churches, Meeting Halls, Schools, Libraries, etc.	65	40
Office Buildings	65	45
Commercial Buildings	NA	50
Playgrounds, Parks, etc.	70	NA
Industry	65	50
Source: Sacramento County, 2011		

TABLE 3.11-6
NON-TRANSPORTATION NOISE STANDARDS – SACRAMENTO COUNTY NOISE ELEMENT

Receiving Land Use	Outdoor Area Daytime[1]	Outdoor Area Nighttime[1]	Interior Day & Night[1]
All Residential	55 / 75	50 / 70	35 / 55
Transient Lodging	55 / 75	NA	35 / 55
Hospital and Nursing Homes	55 / 75	NA	35 / 55
Theaters and Auditoriums	NA	NA	30 / 50
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	NA	35 / 60
Office Buildings	60 / 75	NA	45 / 65
Commercial Buildings	NA	NA	45 / 65
Playgrounds, Parks, etc.	65 / 75	NA	NA
Industry	60 / 80	NA	50 / 70
Notes: [1]Units: Median (L50) / Maximum (Lmax) Source: Sacramento County, 2011			

TABLE 3.11-7
NOISE LEVEL PERFORMANCE STANDARDS FOR RESIDENTIAL AREAS AFFECTED BY NON-TRANSPORTATION NOISE

Noise Level Descriptor	Daytime (7:00 a.m. 0 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Hourly L_{eq} dB	50	45
Maximum Level, dB	70	65
Source: City of Galt, 2009a		

3.11.3 EXISTING NOISE AND VIBRATION LEVELS

Existing Noise Levels

Existing noise levels in the vicinity of the project alternative sites were measured at locations adjacent to sensitive noise receptors and where project-related noise has the potential to raise the ambient noise level

Measurement equipment consisted of Quest Sound Pro SE/DL sound level meters. An acoustical calibrator was used to calibrate the sound level meter before and after use. All instrumentation satisfies the Type II (precision) requirements.

Twin Cities Site

Noise at the Twin Cities site primarily comes from State Route 99 (Hwy 99) to the east and the railroad tracks to the west. Noise measurements were taken at the locations specified in **Figure 3.11-1**. As shown in **Table 3.11-8**, measurements at TC-1 and TC-2 show 15-minute readings of noise levels, mostly from nearby Hwy 99, while measurements at TC-A and TC-B were conducted over a 24-hour period and show the ambient noise levels in the vicinity of the sensitive receptors near the site. Noise measurement output files are provided as **Appendix P**.

TABLE 3.11-8
SUMMARY OF 15-MINUTE AND 24-HOUR NOISE LEVEL MEASUREMENTS AT TWIN CITIES SITE

Site	Date (2014)	Start Time	End Time	Noise Source	Receptor	Measure Noise Level (dBA Leq)
TC-1	August 13	10:09am	10:24am	Hwy 99 Traffic	N/A	65.7
TC-2	August 13	10:33am	10:48am	Hwy 99 Traffic	Businesses	68.7
TC-A	August 13-14	9:00am	9:00am	Hwy 99 Traffic	Residences	58
TC-B	August 13-14	11:05am	11:14pm	Hwy 99 Traffic	Residences	57.3
Source: AES Noise Monitoring, 2014.						

According to the City of Galt General Plan, most of the Twin Cities site is within a Hwy 99 noise contour encompassing 60-70 Ldn (City of Galt, 2009a).

Historic Rancheria Site

Existing noise levels in the vicinity of the Historic Rancheria site were measured at locations adjacent to sensitive noise receptors and where project-related noise has the potential to raise the ambient noise level (**Figure 3.11-2**). As shown in **Table 3.11-9**, the measurement at HR-1 is a 15-minute reading of traffic along Green Road on the south side of the site, while the measurement at HR-A covers a 24-hour period and captures the ambient noise levels in the site's vicinity. **See Appendix P** for noise output files.

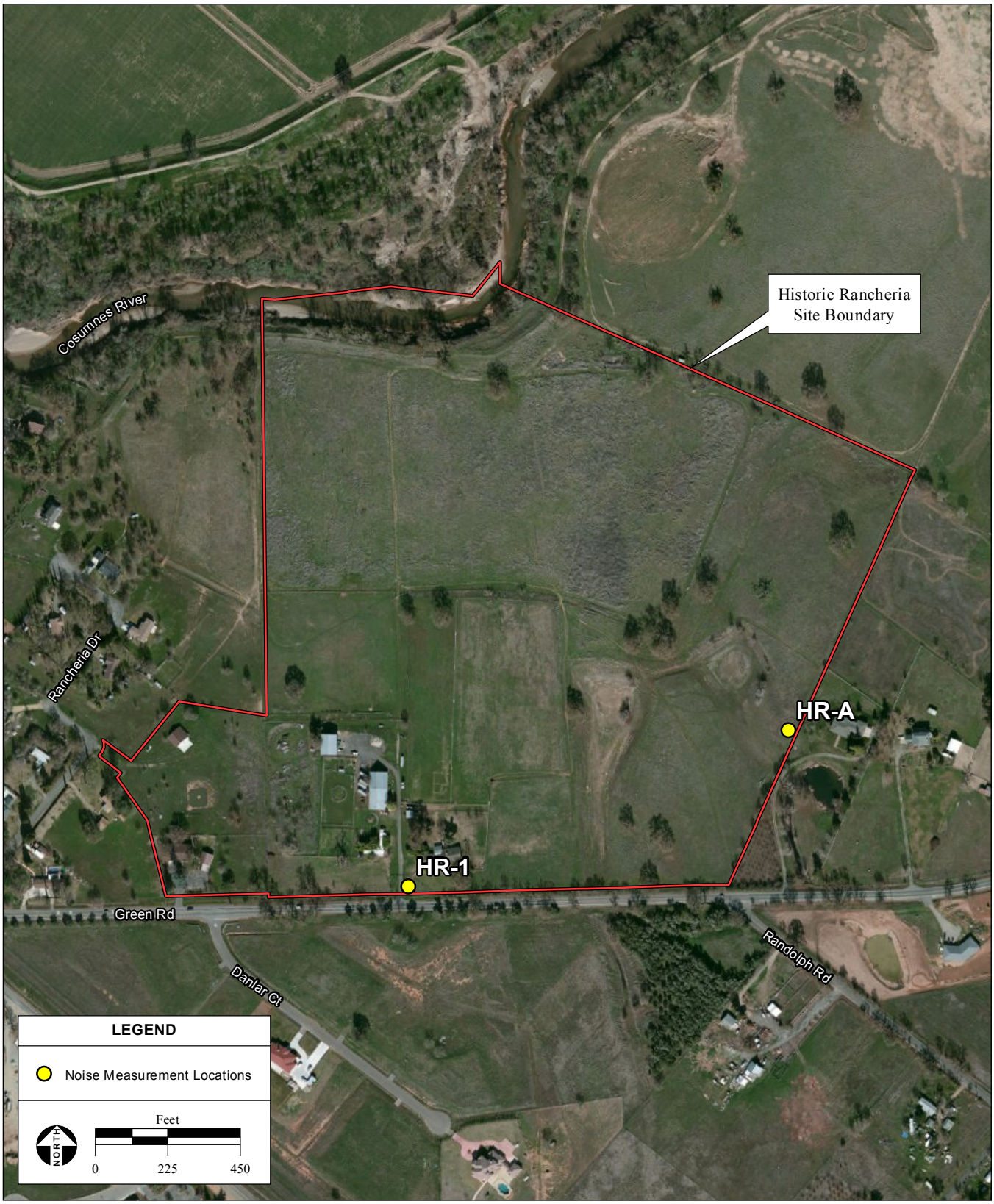
TABLE 3.11-9
SUMMARY OF 15-MINUTE AND 24-HOUR NOISE LEVEL MEASUREMENTS AT HISTORIC RANCHERIA SITE

Site	Date (2014)	Start Time	End Time	Noise Source	Receptor	Measure Noise Level (dBA Leq)
HR-1	August 14	10:43am	10:58am	Traffic on area roadways	Residences	56.1
HR-A	August 14-15	11:56am	11:57am	Traffic on area roadways	Residences and School	42.5
Source: AES Noise Monitoring, 2014.						

SOURCE: Microsoft aerial photograph, 2/2/2012; Sacramento County GIS 2012; AES, 2014

Figure 3.11-1

Twin Cities Site - Noise Measurement Locations



SOURCE: Microsoft aerial photograph, 2/2/2012; Sacramento County GIS 5/5/2014; AES, 2014

Figure 3.11-2

Historic Rancheria Site - Noise Measurement Locations

Elk Grove Mall Site

Noise at the Mall site primarily comes from Hwy 99. Existing noise levels in the vicinity of the Mall site were measured at a location near sensitive noise receptors and where project-related noise has the potential to raise the ambient noise level (**Figure 3.11-3**). As shown in **Table 3.11-10**, measurements at M-1 show the ambient traffic noise levels from Hwy 99. Noise measurement output files are provided as **Appendix P**.

TABLE 3.11-10
SUMMARY 15-MINUTE NOISE LEVEL MEASUREMENT AT MALL SITE

Site	Date (2014)	Start Time	End Time	Noise Source	Receptor	Measure Noise Level (dBA Leq)
M-1	August 14	11:35am	11:50am	Hwy 99 traffic	Residences	52.4
Source: AES Noise Monitoring, 2014.						

Noise Sensitive Receptors

Noise sensitive land uses are generally defined as land uses with the potential to be adversely affected by the presence of noise. Examples of noise sensitive land uses include residential housing, schools, and health care facilities. Existing noise sensitive receptors in the immediate project vicinity include residential housing.

Twin Cities Site - Alternatives A, B, and C

The nearest residential noise sensitive receptor are a residences located approximately 4,000 feet south of the proposed casino/hotel. The next closest residences are located east of Hwy 99 approximately 5,200 feet southeast of the proposed casino/hotel. The nearest school is the Lake Canyon Elementary School located approximately 1.6 miles southeast of the Twin Cities site on Lake Canyon Avenue. The nearest hospital is Kaiser Permanente Hospital located approximately 8.2 miles north of the Twin Cities site.

Historic Rancheria Site - Alternatives D and E

The nearest residential noise sensitive receptors are residences located immediately east and west of the Historic Rancheria site. These residences are located approximately 500 feet from the proposed casino/hotel development. The nearest school is the Wilton Christian School located approximately one mile southeast of the Historic Rancheria site. The nearest hospital is Kaiser Permanente Hospital located approximately 8.7 miles northwest of the Historic Rancheria site.

Elk Grove Mall Site - Alternatives F

The nearest residential noise sensitive receptors are residences along Hampton Oaks Drive located approximately 1,500 feet northeast of the Mall site to the east of Hwy 99. The nearest school is the Florence Markofer Elementary School located approximately 1.2 mile northeast of the Mall site. The

SOURCE: Microsoft aerial photograph, 2/2/2012; AES, 2014

Figure 3.11-3
Mall Site - Noise Measurement Locations

nearest medical office facility is Kaiser Permanente located approximately 1,000 feet north of the Mall site.

Vibration Level

There are no existing vibration sources on the Twin Cities, Historic Rancheria, or Mall sites with the potential to create vibration levels that would create audible noise levels or would cause noticeable ground-borne vibrations.

3.12 HAZARDOUS MATERIALS

This section describes the existing environmental conditions related to hazardous materials in the vicinity of the Twin Cities, Historic Rancheria, and Mall sites. The general and site-specific discussion relating to hazardous materials contained herein provides the environmental baseline by which direct, indirect, and cumulative environmental effects are identified and measured in **Section 4.12**.

3.12.1 INTRODUCTION

Hazardous materials are subject to numerous laws and regulations at several levels of government. At the federal level, human exposure, and in some cases environmental and wildlife exposure, to chemical agents is regulated primarily by four agencies: the United States Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), and the Consumer Product Safety Commission (CPSC).

The EPA administers several Congressional statutes pertaining to human health and the environment, including the Clean Air Act (CAA), which regulates hazardous air pollutants and the Resource Conservation and Recovery Act (RCRA), which regulates land disposal of hazardous materials. The FDA plays a limited role in regulating hazardous substances; it primarily regulates food additives and contaminants, human drugs, medical devices, and cosmetics. OSHA helps ensure employee safety by regulating the handling and use of chemicals in the workplace. The CPSC also plays a limited role in regulating hazardous substances; it mostly deals with the labeling of consumer products. In addition to these agencies, the U.S. Department of Transportation (DOT) regulates the interstate transport of hazardous materials.

Sacramento County (County) uses the definition of 'hazardous material" in the California Health and Safety Code, Division 20, Chapter 6.95, Section 23301, which states: "Hazardous material means a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazards to human health and safety or to the environment if released into the workplace or the environment."

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) addresses the sale, distribution, and labeling of pesticides, as well as the certification and training of pesticide applicators. The FIFRA also establishes recordkeeping and reporting requirements on certified applicators of restricted use pesticides, as well as imposing storage, disposal, and transportation requirements on registrants, and applicants for registration, of pesticides. Pesticide use is regulated through requirements to apply pesticides in a manner consistent with the label. The labeling requirement includes directions for use, warnings, and cautions, along with the uses for which the pesticide is registered (i.e., pests and appropriate applications). Labeling requirements also include specific conditions for the application, mixture, storage, and time period for re-entry to fields following pesticide application, and when crops may be harvested after

applications. If a pesticide is used in a manner contrary to its labeling, the use constitutes a violation of the FIFRA.

3.12.2 DATABASE SEARCHES

The State of California State Water Resource Control Board (CSWRCB) GeoTracker database provides spatial data detailing potential hazardous materials contamination from spills that have occurred within the state.

A database search was also conducted by Environmental Data Resources, Inc. (EDR) for records of known storage tank sites and hazardous materials generation, storage, or contamination on or near the Proposed Project and alternative sites. EDR uses a geographical information system to plot locations of past and current hazardous materials uses or releases. Databases were searched for sites and listings up to two miles from a point roughly equivalent to the center of the Twin Cities site.

Potential hazardous waste effects on the sites for Alternatives A, B, C (Twin Cities site), Alternative D, E (Historic Rancheria site), and Alternative F (Mall site), as indicated in **Table 3.12.-1**, are discussed further below.

TABLE 3.12-1
RESULTS OF HAZARDOUS MATERIALS DATABASE SEARCHES

Property	Proximity to Site	Cleanup Status	Potential Contaminants of Concern	Potential Media Affected	Database
TWIN CITIES SITE					
Denier Properties (SLT5SS1203160)	< 2 miles	Open, inactive[1] (as of 01/02/1965)	DDD[2]/DDE[3]/DDT[4], petroleum/fuels/oils, toxaphene	Other groundwater (uses other than drinking water), under investigation[5]	GEOTRACKER
McGee Correctional TRGN	< 1 mile	Completed, case closed[6] (as of 05/28/1996)	Gasoline	Soil	GEOTRACKER
Twin Cities Service	< 1 mile	Completed, case closed (as of 04/22/2011)	Gasoline	Soil	GEOTRACKER, EDR, SAC COUNTY ML, HIST CORTESE, LUST, UST
Pellandini Farm	< 1 mile	Not reported	Not reported	Not reported	EDR, SAC COUNTY ML
Cal West Seeds, LLC	< 1 mile	Not reported	Not reported	Not reported	EDR, SAC COUNTY ML
Ervin Lance CO Inc.	< 1 mile	Not reported	Not reported	Not reported	EDR, SAC COUNTY ML
Golden Pond Nursery	< 1 mile	Not reported	Not reported	Not reported	EDR, SAC COUNTY ML
Cattlemen's Livestock Market, Inc.	< 1 mile	Not reported	Not reported	Not reported	EDR, SAC COUNTY ML

Property	Proximity to Site	Cleanup Status	Potential Contaminants of Concern	Potential Media Affected	Database
Nick Nimmo Hay, Inc.	< 1 mile	Not reported	Not reported	Not reported	EDR, SAC COUNTY ML
HISTORIC RANCHERIA SITE					
Paul Ward's Texaco	< 2 miles	Completed, case closed (as of 7/10/1997)	Gasoline	Soil	GEOTRACKER
Wilton Cash Store	< 1 mile	Completed, case closed (as of 12/20/2010)	Gasoline	Aquifer used for drinking water supply	GEOTRACKER, LUST, SAC COUNTY ML, HIST CORTESE
Dillard Store	< 2 miles	Completed, case closed (as of 2/29/2012)	Gasoline	Under Investigation[1]	GEOTRACKER
MALL SITE					
Georgia Pacific Resins	<1 mile	Completed, case closed (as of 01/01/1995)	Semi-volatile organic compounds	None specified	GEOTRACKER
Flying "V"	< 1 mile	Completed, case close (as of 04/15/1998)	Gasoline	Aquifer used for drinking water supply	GEOTRACKER
Arco #5772	<1 mile	Completed, case closed (01/08/2007)	Gasoline	Soil	GEOTRACKER
Transcon Line	< 1 mile	Completed, case closed (as of 12/15/2010)	Diesel	Soil	GEOTRACKER
Transcon Lines Facility	< 1 mile	Completed, case closed (as of 11/16/2010)	Petroleum/fuels/oils	Under investigation[1]	GEOTRACKER

NOTES:
[1]As defined by the SWRCB as "no regulatory oversight activities are being conducted by the Lead Agency".
[2] dichlorodiphenyldichloroethane
[3] dichlorodiphenylchloroethylene
[4] dichlorodiphenyltrichloroethane
[5]No rationale for the "Under Investigation" status provided by GeoTracker site history.
[6]As defined by the SWRCB as "a closure letter or other former closure decision document has been issued for the site."

Source: California State Water Resources Control Board, GeoTracker 2014

3.12.3 EXISTING CONDITIONS

Twin Cities Site

A reconnaissance level survey for hazardous materials at the Twin Cities site was conducted on April 29, 2014 by Analytical Environmental Services (AES) staff. Site conditions on the Twin Cities site are predominantly rural and agricultural in nature. The Twin Cities site is dominated by agricultural production, specifically alfalfa fields and corn. On-site development located in the southeastern corner of the Twin Cities site includes an unused nursery and associated building frame skeletal structures, crude remnants of a housing structure, and further north along West Stockton Blvd. is an existing home that

includes a small grain storage silo. An overhead electrical utility line runs north and south along West Stockton Blvd. This line includes transformers on some of the poles. No evidence of leaks was noted during the April 29, 2014 site visit.

A Phase I Environmental Site Assessment (Phase I ESA) of the Twin Cities site was prepared in accordance with the American Society for Testing and Materials (ASTM) Practice E 1527-13 Environmental Site Assessments and Bureau of Indian Affairs (BIA) guidelines (**Appendix Q**; AES, 2013). The purpose of this assessment was to identify environmental conditions and hazardous materials involvement that may pose a material risk to human health or to the environment, or in any way affect the proposed use of the sites.

None of the hazardous materials databases yielded reports of past or current pesticide contaminations for the Twin Cities site. The production of corn and alfalfa, the crops typically grown on the site, does not normally include substantial pesticide use, and the application of restricted pesticides is regulated by the FIFRA. Additionally, an interview with the tenant currently directing agricultural operations on-site revealed that no pesticides have been applied for the past seven years, and very few have been applied in the last twelve years due to cultivation of corn and Sudan grass, which require minimal pesticide usage (Pellandini, 2015).

Existing electric transformers are located on the Twin Cities site. Electric transformers contain non-conducting mineral oil (highly refined hydrocarbon-based oil), which is used for insulation or cooling. When oil-filled equipment is taken out of service, the oil must be disposed of as hazardous waste. Older insulating oils frequently contain polychlorinated biphenyls (PCBs), which are defined as hazardous materials. As discussed in the West Stockton Boulevard 2008 Phase I ESA (prepared for a property to the north of the Twin Cities site), the transformers within the Twin Cities site are owned and operated by the Pacific Gas & Electric Company (PG&E), and past correspondence with PG&E has indicated that the transformers on the site typically do not contain PCBs, but can be determined and analyzed as necessary. Contingent disposal of electric transformers would be carried out by PG&E in consistency with Best Management Practices (BMPs) and hazardous waste removal of PCBs as established in existing PG&E practices and procedures. Therefore, effects associated with existing electric transformers are not further discussed in this EIS.

Surrounding land uses that may involve hazardous materials include the City of Galt's wastewater treatment plant (WWTP), which is less than 0.5 miles west of the Twin Cities site. The WWTP uses various hazardous materials in its treatment processes. Also, railroad tracks bordering the site on the west are used to transport chemicals.

As discussed above, the 2014 EDR report and SWRCB GeoTracker database did not identify any reported releases of hazardous materials or other reported environmental conditions on or near the Twin Cities site. Although no major hazardous materials issues are known to be associated with the Twin Cities site,

several minor issues have been identified that warrant further characterization prior to construction. These issues, including potential leaking fluids from agricultural pumps, household/agricultural waste, and soil discoloration near an agricultural area on the property, are further discussed in **Appendix R**.

Historic Rancheria Site

A reconnaissance level survey of the Historic Rancheria site was conducted on February 12, 2013 by AES staff. During the site visit there were no visible signs of hazardous materials involvement or gross contamination on the Historic Rancheria site. Small quantities of hazardous materials, including general maintenance products, are stored in the barn structure in the central portion of the site and behind the residential structure in the western portion of the Historic Rancheria site. A Phase I ESA was prepared for the Historic Rancheria site (**Appendix Q**).

The SWRCB GeoTracker database search identified one listed site within one mile of the Historic Rancheria site (**Table 3.12-1**). The Wilton Cash Store site, located approximately 0.31 miles west of the Historic Rancheria site at the corner of Green Road and Wilton Road, is listed under the State Leaking Underground Storage Tank (LUST) database, Sacramento County Master List, and Historic Cortese list. Cleanup activities occurred between 2006 and 2010 with closed case status occurring in 2010 (CSWRCB, 2014). The GeoTracker database also identified two other sites within a two-mile radius of the Historic Rancheria site, which are listed **Table 3.12-1**; cleanup has been completed at both sites. The database searches and site visit did not indicate obvious signs of current hazardous materials contamination.

Mall Site

A reconnaissance level survey for hazardous materials was conducted at the Mall site on April 29, 2014 by AES staff. The Mall site included grasslands and incomplete buildings and infrastructure associated with the partially developed mall.

Hazardous material information for the Mall site can be found in the Lent Ranch Marketplace Final Environmental Impact Report, dated February 2001 (City of Elk Grove, 2001) and a Phase I ESA for the Mall site and surrounding properties, conducted by Dames & Moore, Inc. on October 1, 1996 (Dames & Moore, 1996). The 1996 Phase I ESA did not identify any existing underground or aboveground storage tanks of a potentially hazardous nature. Additionally, the SWRCB GeoTracker database was reviewed to verify that no new sources of potential hazardous materials are present on or adjacent to the Mall site; results are shown in **Table 3.12-1** and indicate cleanup has been completed on all identified sites. This database review and the April 2014 site visit did not identify any current sources of contamination on or in the immediate vicinity of the Mall site.

3.13 AESTHETICS

This section describes the existing environmental conditions for the proposed Twin Cities, Historic Rancheria, and Elk Grove Mall sites. The general and site-specific descriptions of the aesthetic environment contained herein provide the environmental baseline by which direct, indirect, and cumulative effects are identified and measured in **Section 4.13**.

3.13.1 ENVIRONMENTAL SETTING

A viewshed is comprised of one or more viewing corridors or vistas from a specific location or viewpoint. Each vista provides a line-of-sight that can be characterized uniquely from among other vistas within the viewshed. The following constituent elements compose the visual experience within each vista:

- Clarity in Line of Sight—the overall visibility of the object within the viewshed, influenced by such factors as trees, buildings, topography or any other potential visual obstruction within the viewshed.
- Duration of Visibility—the amount of time the object is exposed to viewers within the viewshed. For example, a passing commuter will experience a shorter period of viewing time than a resident within the viewshed.
- Proximity of the Viewer—the effects of foreshortening due to the distance of the viewer from the object will influence the dominance of the object in the perspective of the viewer within the viewshed.
- Number of Viewers—the number of viewers anticipated to experience the visual character of the object in forward-oriented view (i.e., not through a rear-view mirror). A densely populated residential district or a busy highway within the viewshed of the object would present more viewers than unpopulated areas.

Viewsheds and viewpoints are described by expressing the strength of the viewing experience, framed within the analytical criteria listed above. While the viewing experience is personal and subjective in nature, the application of the above criteria allows for an objective, baseline assessment of the visual environment and subsequent visual impacts.

There is no comprehensive list of specific features that automatically qualify as scenic resources; however, certain characteristics can be identified that contribute to the determination of a scenic resource. The following is a partial list of visual qualities and conditions that if present, may indicate the presence of a scenic resource:

- A tree that displays outstanding features of form or age.
- A landmark tree or a group of distinctive trees accented in a setting as a focus of attention.
- An unusual planting that has historical value.
- A unique, massive rock formation.

- An historic building that is a rare example of its period, style, or design, or that has special architectural features and details of importance.
- A feature specifically identified in applicable planning documents as having a special scenic value.
- A unique focus or a feature integrated with its surroundings or overlapping other scenic elements to form a panorama.
- A vegetative or structural feature that has local, regional, or statewide importance.

3.13.2 TWIN CITIES SITE – ALTERNATIVES A, B, AND C

Local Plans and Ordinances

Development in the area of the Twin Cites site is currently guided by the Sacramento County (County) General Plan, the County Zoning Ordinance, the City of Galt (City) General Plan, and/or the City Zoning Ordinance. Components of the plans relevant to the topic of aesthetics include landscaping, building height, lighting, and signage.

Sacramento County General Plan

Sacramento County General Plan goals/policies related to visual resources and lighting are as follows:

CI-53 Roadway improvements along established scenic corridors shall be designed and constructed so as to minimize impacts to the scenic qualities of the corridor.

CI-58 Continue to provide scenic corridor protection for Scott Road from White Rock Road south to Latrobe Road, Michigan Bar Road, and Twin Cities Road from Highway (Hwy) 160 east to Hwy 99.

CI-61 Study additional roads which would appropriately be designated as County Scenic Corridors. Roads to be considered are Jackson Hwy in the foothills, Stonehouse Road, approach roads to the City of Folsom, the balance of Twin Cities Road, Ione Road, Meiss Road, and all roads running through the Permanent Agricultural lands.

CO-117 Public roads, parking, and associated fill slopes shall be located outside of the stream corridor, except at stream crossings and for purposes of extending or setting back levees. The construction of public roads and parking should utilize structural materials to facilitate permeability. Crossings shall be minimized and be aesthetically compatible with naturalistic values of the stream channel.

LU-18 Encourage development that complements the aesthetic style and character of existing development nearby to help build a cohesive identity for the area.

LU-31 Strive to achieve a natural nighttime environment and an uncompromised public view of the night sky by reducing light pollution.

LU-22 Exterior building materials on nonresidential structures shall be composed of a minimum of 50 percent low-reflectance, non-polished finishes.

LU-23 Bare metallic surfaces such as pipes, flashing, vents, and light standards on new construction shall be painted so as to minimize reflectance.

LU-24 Require overhead light fixtures to be shaded and directed away from adjacent residential areas.

LU-25 Require exterior lighting to be low

Sacramento County Zoning Code

The Sacramento County Zoning Code Title 1 (General Provisions) provides development standards requiring that illumination of buildings, landscaping, signs, and parking and loading areas be shielded and directed so that no light trespasses onto adjacent properties. Zoning Code Title III (Use Regulations and Development Standards) additionally requires that lighting shall be directed away from residential areas and public streets so that glare that could impact the general safety of vehicular traffic and the privacy and well-being of residents is not produced.

City of Galt General Plan

City of Galt goals and policies related to visual resources are established in the 2030 Galt General Plan (Community Character Element).

Goals

CC-1 To improve the overall visual quality of Galt's urban environment.

CC-2 To maintain and enhance the visual quality of Galt's major corridors, gateways, and entrances

CC-4 To maintain and enhance the quality of Galt's trees.

Policies

CC-1.1 *City Image*
The City should promote high-quality design and building materials for all new development.

CC-1.6 *Open Space Features*
The City should promote community design that incorporates the open space features of Galt's rivers, creek, wetlands, trail corridors, and parks into the travel experience. This includes

visual access to open space features and private and public investment that visually frames and complements natural landscapes and parks.

CC-1.7 *Viewsheds*

The City should work to protect views from frequently used gathering places, major streets, and pedestrian paths to provide a sense of place and orientation.

CC-1.8 *Building Elevations*

The City shall require that all exterior elevations have structural architectural treatments to alleviate long void surfaces. This can be accomplished through varying setbacks, breaking buildings into segments, pitched roof elements, columns, fenestration (doors and windows), substantial building relief/reveals to provide shadow and interest, patios, and similar treatments

CC-1.9 *Signage*

The City should require that all signs on existing buildings be made of durable, high quality materials such as stone, tile, cast concrete, or similar materials. No bare metal, wood, or any other non-durable material shall be allowed.

CC-1.11 *Outdoor Lighting*

The City shall ensure that future development includes provisions for the design of outdoor light fixtures to be directed/shielded downward and screened to avoid nighttime lighting spillover effects on adjacent land uses and nighttime sky conditions.

CC-1.12 *Reflective Materials*

The City shall consider a range of building materials to ensure that future building design reduces the potential impacts of daytime glare.

CC-2.2 *New Development in Corridors*

The City should require that new development within major corridors comply with the following minimum building requirements:

a. All outdoor storage of goods, materials, equipment, and loading docks areas shall be screened from major roadways, to the extent possible.
b. Developments with multiple buildings should have a unifying design theme and sign program.
c. Increased frontage and parking lot landscaping in corridor developments shall be required.

CC-2.3 *Building Setbacks and Landscape Areas*

The City shall encourage increased building setbacks and substantially wider landscape areas consistent with existing neighborhoods along major corridors outside of the Historic Business District.

CC-2.4 *Architectural Enhancements in Major Corridors*

The City should encourage increased architectural enhancements for all buildings and uses within major corridors, including the following:

a. Building elevations should be well-articulated and stress an original design.
b. Buildings should be composed of stucco, brick, or masonry elevations. Tilt-up concrete panels will only be permitted if they have bold relief with textured surfaces and fenestration to break up the monotony. Integral color of panels is strongly encouraged.
c. Metal buildings will be allowed only with significantly enhanced architectural treatment (such as use of trim bands, wing walls, parapets, and reveals).

CC-2.5 *Landscape Maintenance*

The City shall actively monitor and enforce the maintenance of landscaping on private property within major corridors.

CC-2.7 *State Route 99 and State Route 104 Beautification*

The City shall work with Caltrans and private property owners to improve the visual quality of State Routes 99 and 104 through right-of-way maintenance, adjacent property maintenance, code enforcement, reducing the number of billboards, encouraging new investment on visible sites, requiring landscaping, and requiring screening of industrial uses.

CC-4.2 *Trees in New Development*

The City shall require that all new development protect existing trees, to the extent feasible, and incorporate the planting of additional trees and other vegetation, to provide shade, buffering, and visual character. Oak trees are specifically protected by the Galt Municipal Code, but other trees on land that is subject to a development application may be required to be protected through the development phase. New trees shall be carefully selected based on appropriate site conditions (Galt's microclimate, soil type, water usage, surrounding infrastructure and improvements, and distance from buildings). In order to help the Sacramento region attain air quality conformance, the largest tree species possible for the given application, with the lowest biogenic emission rates, should be selected. High biogenic emitting tree species should be avoided or planted only as a second choice when low emitters will be unsatisfactory. Developers can obtain information on biogenic emissions of tree species from the City of Galt Planning Department, the Sacramento Metropolitan Air Quality Management District (SMAQMD), and the Sacramento Tree Foundation.

PCC-4.3 *Tree and Landscape Maintenance Requirements for Large Development Projects*

The City should require, as a condition of approval for large development projects, the establishment of funding mechanisms for the ongoing maintenance of street trees and landscape

strips in public ways. The City should explore the potential for putting all new development in a master landscape and lighting district for maintenance of street trees and landscape strips in public ways.

Twin Cities Views and Viewsheds

Regional Context

The Twin Cities site is currently developed with agricultural operations (cultivated row crops), a single family residence, and the remnants of a historic nursery facility. A small patch of riparian habitat and floodplain occurs within the northern portion of the site along Laguna Creek and within a channelized drainage and pond in the central portion of the site.

The land uses surrounding the Twin Cities site are dominated by residential and industrial development within the City of Galt to the south, the City's wastewater treatment plant (WWTP) and railroad tracks, undeveloped grasslands, and agriculture to the west, Hwy 99 and residential and industrial development to the east, and undeveloped grasslands, cattle feed lots, and riparian areas to the north within Sacramento County.

Description of Viewsheds

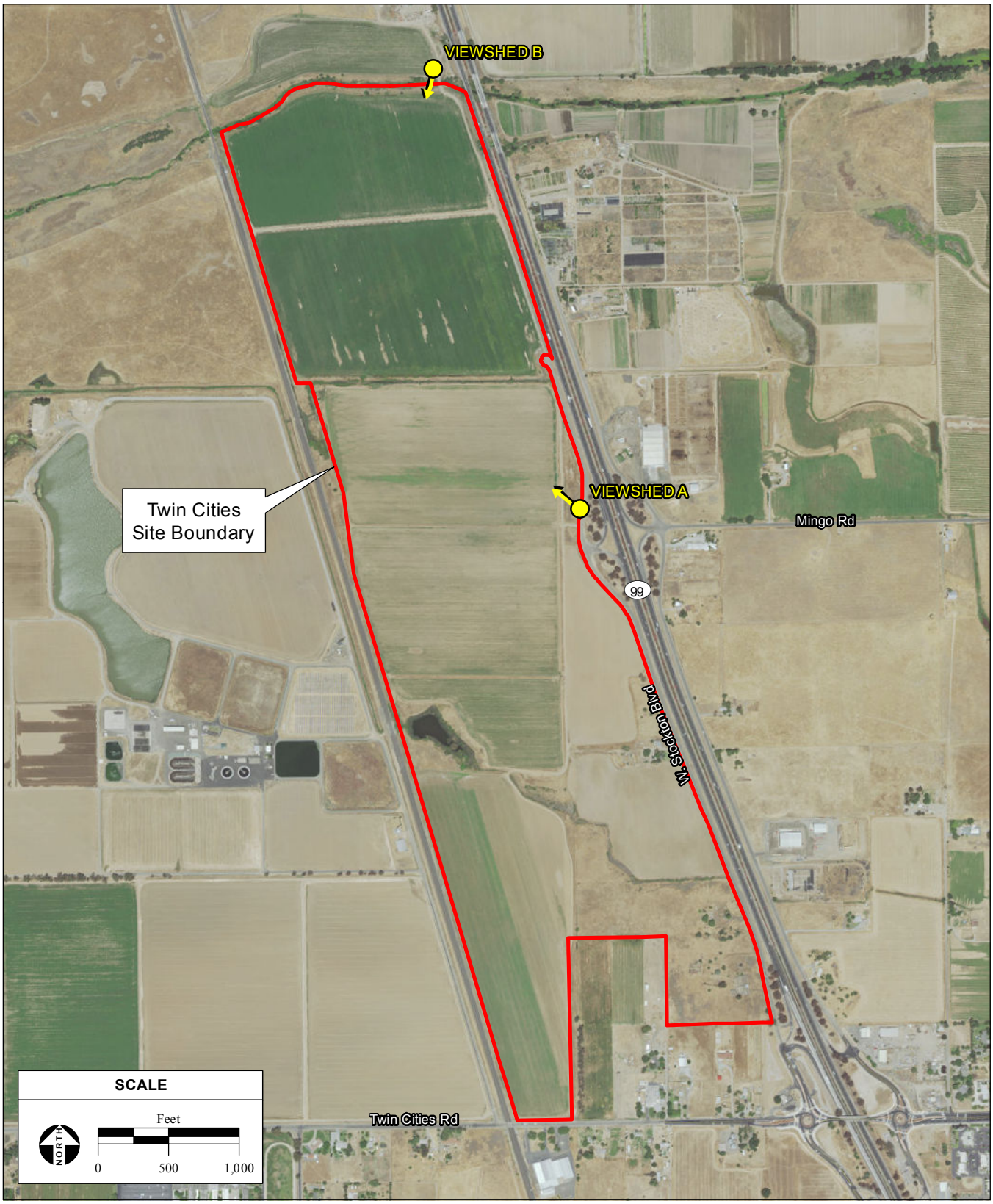
The following is a description of viewsheds surrounding the Twin Cities site. Viewshed locations are shown on **Figure 3.13-1** and photographs of the Twin Cities site are shown in **Figure 3.13-2.**

The topography of the site is generally flat, with the majority of the site approximately 40 feet above mean seal level (amsl). Two viewing corridors have been selected from the viewshed surrounding the Twin Cities site (**Figure 3.13-2**). The locations of these individual viewpoints were selected based on their potential to have the most viewers.

Views of open space area, grasslands, agricultural operations, and electrical transmission lines dominated the surrounding viewshed. In addition, two cellular towers are located adjacent to the Twin Cities site. The viewshed has very few characteristics that would screen or obscure the view of the project.

Scenic Highways

There are no state-designated scenic highways or roads adjacent to the Twin Cities site. The closest scenic highway is Hwy 160, located west of the Twin Cities site along the Sacramento River. However, the Sacramento County (County) General Plan identifies Hwy 99 as an aesthetic corridor (Sacramento County, 2011).



SOURCE: Klai Juba Architects, 2014; Microsoft aerial photograph, 2/2/2012; Sacramento County GIS, 2012; AES, 8/4/2015

Figure 3.13-1
Twin Cities Site Viewshed Photograph Locations

VIEWSHED A: Looking northwest towards Twin Cities Site

VIEWSHED B: Looking southwest towards Twin Cities Site

SOURCE: AES, 8/4/2015

Figure 3.13-2
Twin Cities Site Viewshed Photographs

Shadow, Light, and Glare

No significant lighting, shadow, or glare is currently emitted from the Twin Cities site. Sources of light within the vicinity of the site include vehicle headlights from traffic on Hwy 99 and West Stockton Boulevard immediately east of the Twin Cities site, vehicle headlights from traffic along Twin Cities Road, lighting associated with the residential and industrial development to the south, and lighting associated with the City's WWTP and the Union Pacific railroad to the west of the site.

During the day, sunlight reflecting from structures and motor vehicles is the primary source of glare. The Twin Cities site does not contain unusually bright or uniquely noticeable lighting that affects area residents, and the existing light environment found in the Twin Cities site area is typical of rural areas adjacent to a developed urban area.

3.13.3 HISTORIC RANCHERIA SITE – ALTERNATIVES D AND E

Local Plans and Ordinances

Development of the Historic Rancheria site is currently guided by the County General Plan and County Zoning Ordinances, as described in **Section 3.13.2**.

Historic Rancheria Views and Viewsheds

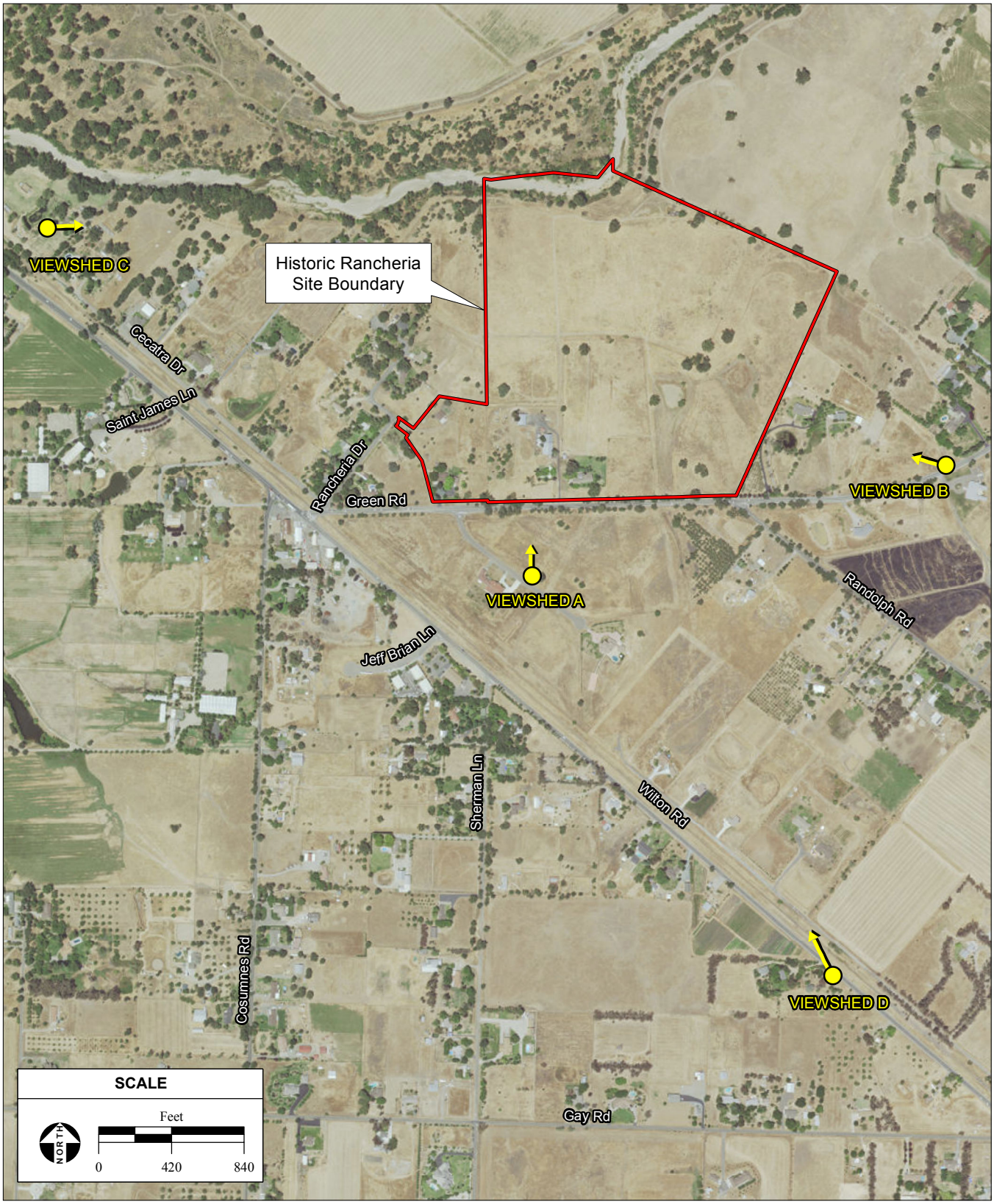
Regional Context

The Historic Rancheria site contains two residential units, one mobile home, two mobile trailers, three garage/storage structures, one barn structure, equestrian training structures, and undeveloped open space. A majority of the Historic Rancheria site consists of undeveloped land, used for the grazing of horses. On-site vegetation includes shrubs, grasses, and trees. The topography of the site is flat with a minor elevation changes between approximately 64 and 78 feet above mean sea level (amsl). The site has a gentle rolling topography with a cross slope of approximately one percent.

The immediate vicinity surrounding the Historic Rancheria site is dominated by residential and agricultural operations. The northern areas of the site along the riparian corridor and the Cosumnes River are designated Nature Reserve by County Zoning designations. Lands to the east and west are zoned as agricultural residential and general agriculture (20-ac). Lands to the north are designated recreation and nature reserve. To the south land use is designated for commercial and offices and agricultural-residential (Sacramento County, 2011)

Views and Viewsheds

The following is a description of viewsheds surrounding the Historic Rancheria site. Four viewing corridors have been selected from the viewshed surrounding the Twin Cities site. Viewshed locations are shown on **Figure 3.13-3** and photographs of viewsheds from the site are shown in **Figure 3.13-4a** and **Figure 3.13-4b.** These individual viewpoints were selected based on adjacent sensitive receptors and



SOURCE: USDA NAIP Aerial Photograph, 2014; AES, 8/4/2015

Figure 3.13-3
Historic Rancheria Site Viewshed Photograph Locations

VIEWSHED A: Looking north towards Historic Rancheria Site

VIEWSHED B: Looking northwest towards Historic Rancheria Site

SOURCE: AES, 8/4/2015

Figure 3.13-4a
Historic Rancheria Site Viewshed Photographs

VIEWSHED C: Looking east towards Historic Rancheria Site

VIEWSHED D: Looking north towards Historic Rancheria Site

SOURCE: AES, 8/4/2015

Figure 3.13-4b
Historic Rancheria Site Viewshed Photographs

local roadways. Views of the site are dominated by undeveloped grasslands, rural residences, oak trees, and overhead power lines, and are partially obscured from the south and east by oak trees along Green Road. The riparian corridor along the Cosumnes River provides an additional visual barrier from vantage points to the north. The rural residential units to the east of the Historic Rancheria site have unobstructed views of the site.

Scenic Highways

There are no state designated scenic highways or roads adjacent to the Historic Rancheria site; however, the County General Plan identifies Hwy 99 as an aesthetic corridor (Sacramento County, 2011).

Shadows, Light, and Glare

Existing light sources within the Historic Rancheria site and in the general vicinity are fairly typical of rural residential and agricultural buildings. During the day, sunlight reflecting from structures and motor vehicles is the primary source of glare. The principal sources of nighttime light and glare are vehicle headlamp illumination, streetlights, and building lighting. The Historic Rancheria Site does not contain unusually bright or uniquely noticeable lighting that affect area residents, and the existing light environment found in the Historic Rancheria area is typical of rural areas.

3.13.4 ELK GROVE MALL SITE – ALTERNATIVE F

Local Plans and Ordinances

Lent Ranch Marketplace Special Planning Area

Development of the Elk Grove Mall site (Mall site) is currently guided by the City of Elk Grove (Elk Grove) General Plan, Elk Grove Zoning Ordinance, and the goals and policies included in the Lent Ranch Marketplace Special Planning Area (SPA). The Lent Ranch SPA, approved in 2001, designates the Mall site and surrounding properties for commercial land uses. Furthermore, the SPA is divided into five land uses consisting of a regional mall, community commercial, office entertainment, visitor commercial, and multi-family residential. The SPA provides for streetscape design standards, building height restrictions, and landscaping concepts (City of Elk Grove, 2001). However, it is currently the subject of ongoing litigation.

City of Elk Grove Zoning Code

The following policies related to various aspects of aesthetics including signage, landscaping, lighting, and building requirements are contained within the City of Elk Grove zoning code (City of Elk Grove, 2014) and are currently applicable to the development of the Mall site.

Chapter 23.47 Billboard Signs
Chapter 23.48 Building Height Measurements and Exceptions

Chapter 23.54 Landscaping
Chapter 23.56 Lighting

Views and Viewsheds

Regional Context

The 28-acre Elk Grove Mall site (Mall site) is located on the southern edge of the developed area of the City of Elk Grove and the metropolitan area surrounding the City of Sacramento to the north. The Mall site is developed with a partially completed regional mall. The large scale retail development, planned and partially developed prior to 2008, includes paved parking lots, buildings, and developed traffic infrastructure; however, the parking lots are overgrown with weeds and the buildings are only partially completed and have been sitting unused and unmaintained for several years. Temporary security chain-link fencing surrounds the site. The area surrounding the Mall site contains agricultural fields and related businesses, residential uses, commercial businesses, light industry, recreational areas, public utilities, and open space areas. The existing land uses to the west and south of the Mall site include vacant land and agricultural uses. To the north, land uses include residential, commercial, and mixed use development. To the east of the Mall site across West Stockton Boulevard and Hwy 99, existing land uses consist of industrial, commercial, residential and vacant land.

Description of Viewsheds

The following is a description of viewsheds surrounding the Mall site. Four viewing corridors have been selected from the area surrounding the Mall site. Viewshed locations are shown on **Figure 3.13-5** and photographs of viewsheds of the Mall site are shown in **Figure 3.13-6a** and **Figure 3.13-6b**. These individual viewpoints were selected based on the most prevalent vantage points nearby. Views of grasslands and open space are found to the south and west of the Mall site, and industrial/commercial development on and to the north and east of the site.

The viewshed from the west has very few characteristics that would screen or obscure the view of development on the Mall site. Views from the north, south and east are mostly obstructed by individual industrial buildings; however, glimpses of open space areas are visible in the background. Views from vehicles passing on the highway to the west of the site are mostly unobstructed.

Scenic Highways

No identified state-designated scenic highways are located in the vicinity of the Mall site (Caltrans, 2014). The County General Plan identifies Hwy 99 to the east of the Mall site as an aesthetic corridor (Sacramento, 2011).

SOURCE: Klai Juba Architects, 2014; USDA NAIP Aerial Photograph, 2014; AES, 8/4/2015

Figure 3.13-5
Mall Site Viewshed Photograph Locations

VIEWSHED A: Structures on Mall Site

VIEWSHED B: View of Mall Site

SOURCE: AES, 8/4/2015

Figure 3.13-6a
Elk Grove Mall Site Viewshed Photographs

VIEWSHED C: Looking north from Mall Site

VIEWSHED D: Mall Site parking lot and lighting

SOURCE: AES, 8/4/2015

Figure 3.13-6b
Elk Grove Mall Site Viewshed Photographs

Shadow, Light, and Glare

Due to the lack of retail/commercial operations on the Mall site, no significant lighting, shadow, or glare is currently present in the daytime, though there is extensive street and parking lot lighting infrastructure. The various land uses present near the Mall Site emit ambient light from three main sources including Hwy 99, commercial/industrial uses east of Hwy 99, and lighting associated with surrounding residential and agricultural buildings. During the day, sunlight reflecting from structures and motor vehicles is the primary source of glare. The principal sources of nighttime light and glare are vehicle headlamp illumination, streetlights, parking lot lights, and building lighting. During nighttime hours, this ambient light environment can be accentuated during periods of low cloudiness or fog, which increases the amount of light and reflective glare.